



CITY OF ROCKLIN

CLIMATE ACTION PLAN

APRIL 2011

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Executive Summary

The City of Rocklin¹ is taking proactive steps to mitigate the impacts of climate change and lessen its contribution of greenhouse gases to the atmosphere. This Climate Action Plan (CAP) was completed as part of the City's General Plan Update Environmental Impact Report (EIR). The CAP provides goals and measures that will direct the City's efforts to decrease greenhouse gas emissions and prepare for the impacts of climate change. The CAP also ensures that the City's future activities and development patterns conform to the recommendations of state climate change legislation. The CAP is a culmination of an array of other sustainability initiatives taken by the City to date and will now provide a coordinated strategy and direction for all related efforts that follow.

Climate Change and Local Risks

As established by scientific consensus, the world's population is releasing greenhouse gas emissions as by-products resulting from fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. Greenhouse gases are now being released more quickly than the earth's natural systems can absorb them, which has exacerbated the natural greenhouse effect and thus increased the heat trapped around the earth's surface. Greenhouse gas emissions are predicted to create a warming of the earth's surface by as much as 2 to 10 degrees Fahrenheit over the next 100 years. This consequence of the greenhouse effect could create numerous hazards worldwide.

Locally, the City of Rocklin could experience many of these consequences, including an increased rate of wildfires, detriments to wildlife, deteriorating public health, reduced water supply, drought, and increased flooding potential. Motivated by these local and other more encompassing global challenges, the City has initiated deliberate steps to address climate change.

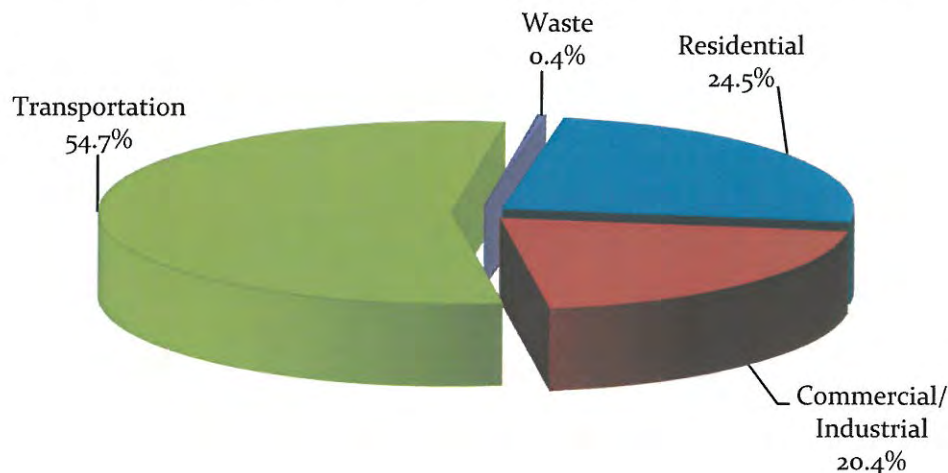
2008 Greenhouse Gas Inventory and Forecast

The City conducted a 2008 greenhouse gas (GHG) inventory for community-wide sources. This inventory established a baseline against which future changes in emissions can be measured and provides an understanding of the sources of GHG emissions and the best strategies for emissions reductions. Primary findings of the percentage of total emissions by sector are shown in **Figure ES-1**.

As illustrated in **Figure ES-1** below, the transportation sector is responsible for the majority of emissions released within the Rocklin community (54.7%). Electricity and natural gas consumption in the residential and commercial/industrial (i.e., non-residential) sectors constitute the second largest percentage of emissions (44.9%), with waste the smallest sector (0.4%).

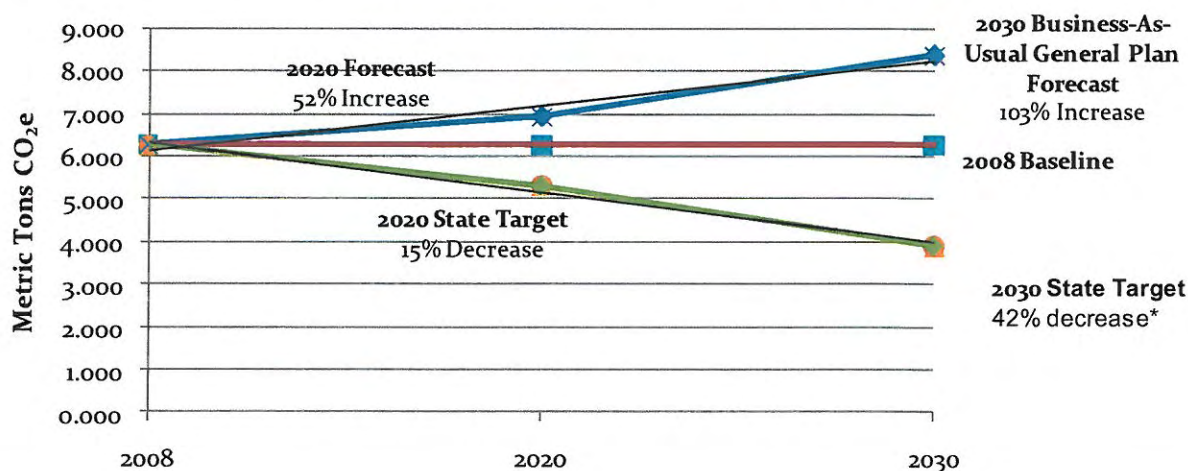
¹ In this report, the term "City" refers to the area inside the jurisdictional boundary of the City of Rocklin, whereas "City government" or "municipal" refers to those activities which are under the operational control of City agencies.

Figure ES-1 – City of Rocklin Community-Wide GHG Emissions by Sector, 2008



Using data in the 2008 inventory, the City forecast emissions to 2020 and 2030, estimating a “business-as-usual” scenario if no actions are taken to address current consumption trends, and compared this scenario with state emissions reduction goals, as shown in **Figure ES-2**.

Figure ES-2 – Business-as-Usual Emissions Growth and State Reduction Targets



*2030 target is an interpolation of the Executive Order S-3-05 2050 target, which establishes a target of 80% below 1990 levels by 2050.

The emissions forecast is based on the City's 2009 General Plan Update buildout conditions in 2020 and 2030.² In order to achieve state reductions targets and lower the projected 2030 business-as-usual forecast to meet 2020 and 2030 state targets, the City must take dramatic and deliberate action.

² General Plan buildout is the growth scenario under which land is developed to the maximum potential or theoretical capacity permitted by the proposed General Plan and its land use designations.

Climate Action Plan Reductions

The Climate Action Plan outlines the City's strategies to achieve these reduction targets locally and consolidates local actions with regional and state strategies in one plan to analyze their effectiveness at reducing Rocklin's contribution to global climate change. This approach realizes the importance of large-scale coordination among local governments, regions, states, and nations to achieve desired reduction targets.

Presenting greenhouse gas emissions reductions as a per service population metric most accurately depicts the City's forecasted emissions and reduction potential. Linking emissions to service population establishes a balanced point of comparison with other jurisdictions. This approach is similar to the metric approach that the California Air Resources Board will use for implementation of Senate Bill 375 (Steinberg, Chapter 728, Statutes of 2008). A per service population metric is simple, easily understood by the public, and consistent with metrics currently in use by many Metropolitan Planning Organizations, including the Sacramento Area Council of Governments (SACOG). Accordingly, the City adopted this approach in the Climate Action Plan to most accurately understand and depict the relationship between growth and emissions trends. The City's service population is presented below in **Table ES-1**.

Why Present Emissions Reductions as a Per Service Population Metric?

Linking emissions reductions to service population creates a clear figure that is easily understood by the public.

Service population includes the total number of workers and residents in the City. The City of Rocklin calculated service population using General Plan assumptions and I-PLACE3S software. The General Plan forecasts population and nonresidential square footages. I-PLACE3S software was developed by the Sacramento Area Council of Governments, and it provides region-specific ratios of average employees per square footage of nonresidential use.

Table ES-1 – Summary of Service Population³

Population and Jobs in the City of Rocklin	2008	2020	2030
Population	53,843	73,414	76,136
Jobs	14,488	20,744	27,659
Service Population (Population + Jobs)	68,331	94,158	103,795

As shown in Table ES-2 below, Rocklin's local actions to reduce emissions in this CAP are categorized into eight overarching goals. The reduction potential for each goal is represented in metric tons carbon dioxide equivalent (CO₂e) per service population. By 2020, these goals and state-mandated actions have the potential to reduce greenhouse gas emissions 33.24% below business-as-usual, reducing

³ Population from City of Rocklin (2009). General Plan Update Administrative Draft Environmental Impact Report. 4.0 Introduction to the Environmental Analysis and Assumptions Used. Page 4.11-1 Total employees were calculated using total retail, office, and industrial square footages as established in the General Plan Update EIR. The total square footage of all non-residential uses was multiplied by employee to square footage ratios provided by SACOG in its I-PLACE3S software.

forecast emissions from 6.920 metric tons of carbon dioxide equivalent per service population to 4.620 metric tons of carbon dioxide equivalent per service population. This decrease is equivalent to a reduction of 26.24% below baseline. The City's potential reductions exceed the Assembly Bill (AB) 32 target to reduce greenhouse gas emissions from baseline levels by 15% by 2020, which would equal achieving emissions of 5.324 metric tons of carbon dioxide equivalent per service population. By 2030, these actions have the potential to reduce total emissions by 51.23% below business-as-usual, to 4.084 metric tons of carbon dioxide equivalent per service population.

Table ES-2 – Summary of Climate Action Plan Reductions

City of Rocklin Climate Action Plan Greenhouse Gas Reductions (Metric Tons CO ₂ e per Service Population)		2020	2030
CAP Goals			
1	Energy Efficiency and Conservation	-0.212	-0.375
2	Renewable Energy	-0.013	-0.045
3	Green Building and Design	-0.129	-0.349
4	Downtown Rocklin	-0.004	-0.007
5	Citywide Land Use	-0.316	-0.516
6	Alternative Transportation Modes	-0.416	-0.987
7	Vehicle Efficiency and Alternative Fuels	-0.020	-0.033
8	Waste Reduction	-0.010	-0.009
Total Local Reductions*		-1.119	-2.323
State Actions			
Renewable Portfolio Standard		-0.448	-0.914
Pavley (AB 1493)		-0.673	-0.878
Low Carbon Fuel Standard		-0.061	-0.176
Total State Reductions*		-1.181	-1.968
Total Reductions (Local + State)*		-2.300	-4.290
Business-as-Usual Emissions		6.920	8.374
Net Emissions		4.620	4.084
Percentage Change from Business as Usual		-33.24%	-51.23%
Percentage Change from 2008 Levels		-26.24%	34.80%

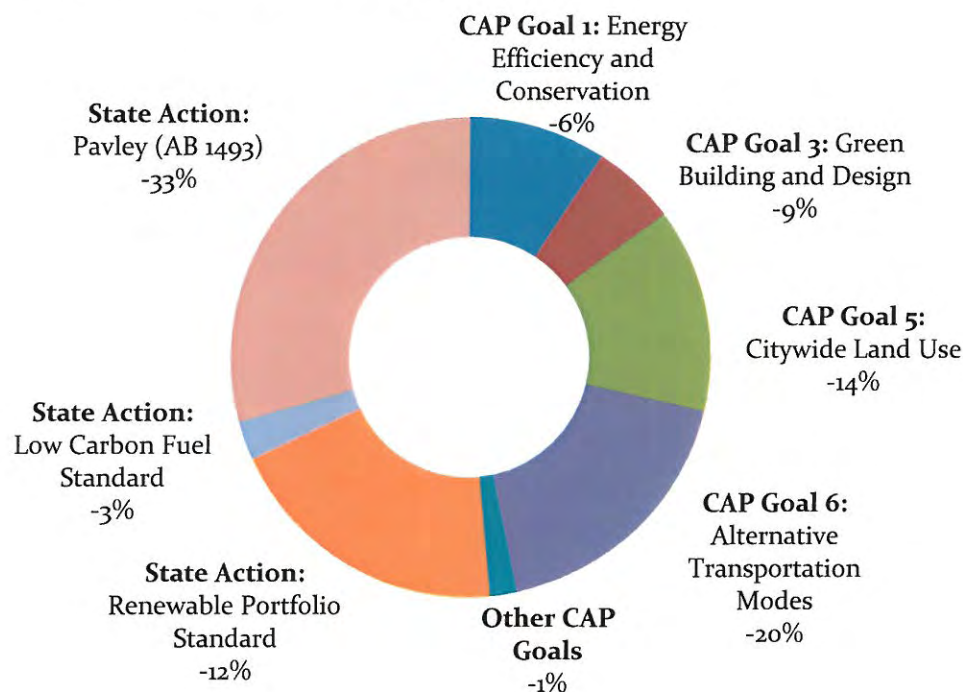
* Subtotals and totals may not equal the sum of component parts shown in this table due to rounding.

As shown in **Table ES-2**, these strategies will result in a significant reduction from business-as-usual General Plan Update emissions growth. State reductions account for an almost equal portion of the reductions in Rocklin and will be achieved through AB 1493 (Pavley), the Low Carbon Fuel Standard,

and the Renewable Portfolio Standard. **Figure ES-3** depicts the percentage of each reduction category. The figure indicates that some local reduction categories produce a relatively small amount of greenhouse gas savings; however, they are included in this document due to their importance to Rocklin's overall commitment to sustainability and for their potential for future development.

The reduction of greenhouse gas emissions to 26.24% below baseline by 2020 is a great accomplishment that achieves state climate change legislation targets.

Figure ES-3 – 2030 Reduction Summary by Action



Next Steps

To achieve these reductions, the City must take concerted action that goes above and beyond its normal practice. The City will coordinate the implementation of each reduction measure and the operation of the programs that result from implementation. It is recommended that the City update the 2008 Community Greenhouse Gas Emissions Baseline Inventory at the completion of each implementation phase to determine how emissions have changed since the 2008 baseline and update reduction measures in the CAP to achieve the maximum possible effect.

Achievement of the reductions established in this CAP requires timely implementation complemented with the initiative of each resident, employee, and business of Rocklin. This coordinated and comprehensive approach will help the City protect the earth and the local community for generations to come. The CAP aims to ensure that Rocklin is positioned to excel in spite of anticipated challenges resulting from climate change.

I. Introduction

The City of Rocklin is taking a proactive approach to climate action and greenhouse gas emissions analysis through the development of a Climate Action Plan (CAP) in conjunction with the City's General Plan Update Environmental Impact Report (EIR). This CAP encompasses all current and future efforts to reduce greenhouse gas emissions and reduce the effects of global climate change. Efforts are organized into goals and measures to reduce waste, energy consumption, and vehicle trips and to promote environmentally aware choices within the community. By incorporating the goals and measures of this CAP into the General Plan Update EIR, a state-mandated document, Rocklin is ensuring that all future development and planning activities within the City conform to the objectives of the CAP and state climate change legislation.

Global Climate Change – A Scientific Overview

Scientific consensus holds that the world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them. These gases are released as by-products of fossil fuel combustion, waste disposal, energy use, land-use changes, and other human activities. This release of gases, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space (**Figure 1**). Models show that this phenomenon, known as the greenhouse effect, could lead to a 2 to 10 degree (Fahrenheit) temperature increase over the next 100 years. The Intergovernmental Panel on Climate Change (IPCC) warns that most of the warming observed over the last 50 years is attributable to human activities.

Although the terms are used interchangeably, there is a difference between the terms "climate change" and "global warming." According to the State, climate change refers to "any long-term change in average climate conditions in a place or region, whether due to natural causes or as a result of human activity." Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased greenhouse gas emissions from human activities. The use of the term "climate change" is becoming more prevalent because it encompasses all changes to the climate, not just temperature. Additionally, the term "climate change" conveys temporality, implying that climate change can be slowed with the efforts of local, regional, state, national, and world entities.



Figure 1 – The Greenhouse Effect

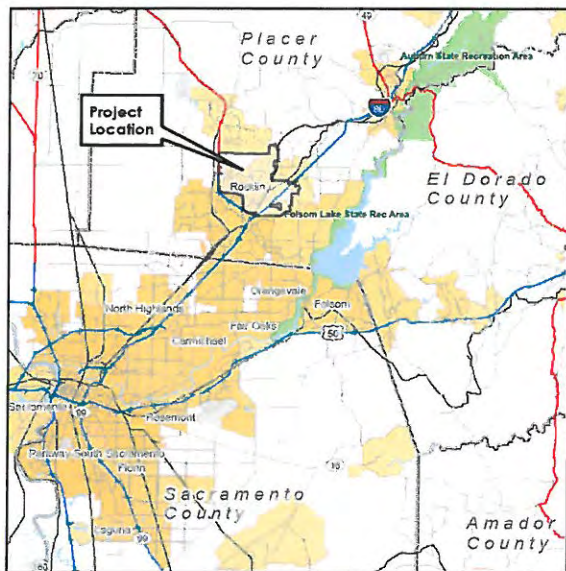


Figure 2 – Map of Rocklin in Context with Surrounding Area

Local Impacts of Climate Change

As suggested by the term “climate change,” increases in greenhouse gas emissions can have many unintended consequences to a community. The City of Rocklin is located in Placer County. Elevations in the City range from 150 to 525 feet above sea level. The community consists of urban areas, grasslands used for limited grazing, and riparian habitat areas, partially covered with native oaks and grasslands. Antelope Creek, Secret Ravine Creek, Pleasant Grove Creek, Clover Valley Creek, and Sucker Ravine Creek are perennial streams that provide riparian habitat for a variety of animals.

Rocklin is served by two major highways, Interstate 80 (I-80) and State Route (SR) 65. I-80 provides access from Rocklin to Sacramento and the Bay Area to the west, and to the cities of Auburn and Reno to the east.

SR-65 provides access from Rocklin to the cities of Lincoln and Marysville/Yuba City and State Route 70 to the north, and to the junction of I-80 to the south. Rocklin is located in the Loomis Basin, which is situated in the western foothills of the Sierra Nevada. The regional geology of the Rocklin area has been influenced by mountain uplift and volcanic activity in the Sierra Nevada and erosion off the crest of the mountains. No substantial commercial agricultural uses exist in the City.

The potential consequences of climate change for the City of Rocklin include:⁴

Increased rate of wildfires. Wildfire risk is based on a combination of factors including precipitation, winds, temperature, and vegetation, all of which are susceptible to increased warming. Temperature is anticipated to rise between 2 and 5 degrees Fahrenheit by 2050 and between 4 and 9 degrees Fahrenheit by 2100. Enhanced wildfire risk from climate change will likely increase public health and safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, and vegetation conversions and habitat fragmentation.

Negative impacts on wildlife. Climate change could cause disruptions in animal migration and plant pollination, as well as degradation of sensitive aquatic ecosystems, and may potentially increase invasive species. As temperatures rise, species are moving north in California or to higher elevations. This change in migration disrupts the food chain and prevents some plant species from being pollinated. Water and food supplies are expected to be more variable and to shift as the seasons change on different time frames. With vegetation, reduction in soil moisture will result in early dieback

⁴ California Natural Resources Agency (CNRA). 2009 California Climate Adaptation Strategy Discussion Draft. Public Review Draft.

of many plants, potentially leading to conflicts with animal breeding seasons and other natural processes. Many of the potential effects on wildlife are still being studied, but due to inability to adapt to new climates, the potential for severe species loss is prescient.

Deteriorating public health. Heat waves are expected to have a major impact on public health. As an inland area, Rocklin is anticipated to experience more pronounced warming than coastal regions. The frequency, intensity, and duration of extreme heat events and heat waves are likely to increase the risk of mortality and morbidity due to heat-related illness and complications of existing health conditions.

Altered weather conditions such as too much moisture, fewer freezing spells, and warmer temperatures can affect mosquito-breeding and mosquito-borne diseases. Though increased rainfall may temporarily provide increased mosquito breeding sites, in fact, rainfall has little effect on West Nile virus (WNV) transmission since urban mosquitoes breeding in municipal water systems may benefit from below-normal rainfall. Vector control districts throughout the state are already evaluating how they will address the expected changes to California's climate.

Poor air quality associated with wildfires could affect high-risk segments of the population including the elderly, infants, individuals suffering from chronic heart or lung disease, and those who work outdoors. During wildfires, large populations can be exposed to a complex mixture of pollutant gases and particles, which can have both acute and chronic health impacts. Smoke can irritate the eyes, harm the respiratory system, and worsen chronic heart and lung diseases, including asthma.

Vulnerable populations that do not have the resources to adapt to the changes that are expected to impact the community will need assistance. Social equity issues related to the unequal distribution of resources and increased costs to address community-wide health risks as well as the basic life supports of water, food, shelter, and security will need to be addressed proactively to reduce the potential for financial strain in and on the City.

Municipal emergency response services and utilities would also be affected by climate change. Spikes in energy demand during heat waves, repair of infrastructure destroyed or interrupted by flooding or fires, and increased calls for medical emergencies or rescue during a flood or fire event would all put increased strains on local service providers. The additional impact on local services in turn could translate into the need for additional assistance from county, state, or potentially federal service providers.

Reduced water supply. Statewide precipitation is anticipated to decline 12% to 35% by the year 2050. Higher temperatures are also expected to increase evaporation and make for a generally drier climate. In addition, more precipitation will fall as rain rather than snow, which will cause snow to melt earlier in the year and not in the warmer, drier months when water is in higher demand. With rainfall and meltwater running off earlier in the year, the state will face increasing challenges of storing the water for the dry season while protecting Californians downstream from floodwaters during the wet season. Over the last century, the average early spring snowpack runoff has decreased by about 10%, a loss of 1.5

million acre-feet of water. The expected reduction in the Sierra snowpack is particularly troublesome for California water supplies, as the snowpack essentially functions as California's largest surface water reservoir.

Drought. Declines in precipitation and drier cycles lead to the potential for increased frequency and duration of drought. Risks to public health associated with drought include impacts on water supply and quality, food production, and risks of waterborne illness. Drought may also lead to increases in the concentration of contaminants in drinking water supplies.

Increased flooding potential. While there is an overall concern of hotter, drier summers throughout California, at the same time there are also continued risks from intense rainfall events that can generate more frequent and/or more extensive runoff and flooding. Creeks traversing Rocklin could be subject to increased flows and overtopping of banks during such events. Localized flood events could increase in association with periods of heavy rain. Flood peaks can increase erosion rates that result in greater sediment loads and turbidity, while runoff from streets can increase concentrations of pollutants.

Climate Change Regulatory Framework

California continues to be a leader in addressing climate change in the United States and in the world. In June of 2005, Governor Schwarzenegger issued landmark Executive Order S-3-05 establishing progressive greenhouse gas emissions targets for the entire state. To support these reduction targets, the California legislature adopted the California Global Warming Solutions Act of 2006, also known as AB 32. The law requires the California Air Resources Board (CARB) to develop regulatory and market mechanisms that will reduce greenhouse gas emissions to 1990 levels by 2020. In December 2008, CARB approved the Assembly Bill (AB) 32 Scoping Plan outlining the State's path to achieve the goal of AB 32. The plan cites local government action as an integral partner to achieving the State's goals.

AB 32 has caused a ripple effect among cities, counties, and environmental groups throughout the state. In *State of California Attorney General v. San Bernardino County* in 2007, the California Attorney General's Office argued that the environmental impact report for San Bernardino's new general plan did not conform to the overall goals of AB 32 because it did not adequately analyze or mitigate the effects of development on global warming. The County settled with the State by agreeing to produce a greenhouse gas emissions reduction plan much like this report. The Rocklin reduction plan at the same time furthers California's commitment to addressing climate change.

The San Bernardino settlement agreement led senators to write Senate Bill (SB) 97 in August 2007. This law formally acknowledges that climate change is an important environmental issue that requires analysis under the California Environmental Quality Act (CEQA). The Governor's Office of Planning and Research (OPR) has developed draft guidelines for addressing climate change in CEQA documents, which the State Natural Resources Agency adopted in December, 2009. The guidelines became effective in March of 2010.

With the majority of California's emissions stemming from transportation, the legislature passed Senate Bill 375 in September 2008 to reduce greenhouse gas emissions by linking transportation funding to land use planning. The bill requires Metropolitan Planning Organizations (MPOs) like the Sacramento Area Council of Governments (SACOG) to create Sustainable Communities Strategies (SCSs) in their regional transportation plans (RTPs) for the purpose of reducing suburban sprawl. SB 375 also creates incentives for implementation of the SCS. Additional state efforts are described throughout this CAP in the context of local impacts and decision-making.

City of Rocklin Existing Efforts

The City of Rocklin has many existing initiatives that reduce greenhouse gas emissions from municipal operations and citywide activities. Some of these initiatives are described in further detail throughout the goals and measures of the CAP in order to provide context for future efforts.

Energy Emissions

The City is a member of the U.S. Green Building Council, and both the City building inspection and facilities construction and management staff are trained in green building requirements and certification. The City is incorporating increased indirect lighting into new facility construction projects and is working toward Leadership in Energy and Environmental Design (LEED) certification on its administration and police station buildings.

The City participates in Pacific Gas & Electric's (PG&E) Climate Smart Program to offset GHG emissions from energy used in City facilities. To improve facility energy efficiency, the City has installed a heating, ventilating, and air conditioning (HVAC) energy efficiency management system for some facilities and is working with the California Energy Commission through the Motherlode Energy Watch Program to facilitate replacement of additional HVAC and lighting equipment that is not energy efficient. The City has also replaced traffic signal lights (incandescent bulbs) with light-emitting diodes (LEDs) and has constructed solar carports at its police station facility. The solar panels generate nearly 40% of the annual electricity required to operate the police station. The City also offers a voluntary holiday furlough program that is utilized by 90% of City employees, which decreases energy consumption in City facilities during that furlough period.

To support the use of renewable energy in the Rocklin community, the City is participating in implementing a universal residential solar program with neighboring jurisdictions. The program seeks to address residential solar programs and create consistent information resources regarding green building practices for use on relevant websites. The City also hosted a free, two-hour "Solar Saturday" workshop to provide information and education on residential solar technology and hosted a similar workshop for developers. The City provides training opportunities for City building department and facilities staff to educate them on green building practices and programs.

Water and Waste Emissions

To reduce water consumption in municipal facilities and operations, the City utilizes sensor-activated faucets in restrooms, uses untreated water for irrigation in some locations, and includes drought-tolerant plants in street landscaping. To improve water efficiency in the Rocklin community, landscape plans for new development must be certified by the landscape architect as meeting the requirements of the Water Conservation in Landscaping Act (Government Code Section 65591, et seq.) and must specify drought-tolerant plants and drip irrigation along streetscapes in new projects. Developers must ensure that landscape plans include an automatic irrigation system.

With regard to waste management, the City uses recycled paper products and green cleaning products in restrooms and maintenance activities. Rocklin is also an active partner in the Placer County Materials Recovery Facility (MRF) that supports recycling of household and business waste.

Transportation Emissions

The City's Fleet Division has taken steps to reduce GHG emissions, including establishing procedures to reduce idling time, installing diesel oxidation catalysts on diesel-powered vehicles, and introducing alternative fueled E85 vehicles to the fleet.

To help reduce GHG emissions from transportation in the Rocklin community, the City has adopted a Neighborhood Electric Vehicle (NEV) Transportation Master Plan. The plan identifies roadways that will accommodate NEVs. The City also has a centrally located park-and-ride lot and another park-and-ride lot at the Sierra College Boulevard and Interstate 80 interchange.

Through the General Plan land use and development planning process, Rocklin has set aside a significant portion of land as open space and park land. The City has an Oak Tree Preservation and Mitigation Ordinance and has conducted native oak tree reforestation and restoration projects in City parks and open space and along creek channels. In addition, the City's Zoning Code and development regulations have specific parking lot shade tree requirements, and the City has adopted an Urban Forest Management Plan with specific strategies for maintaining, preserving, and expanding tree canopy within the City.

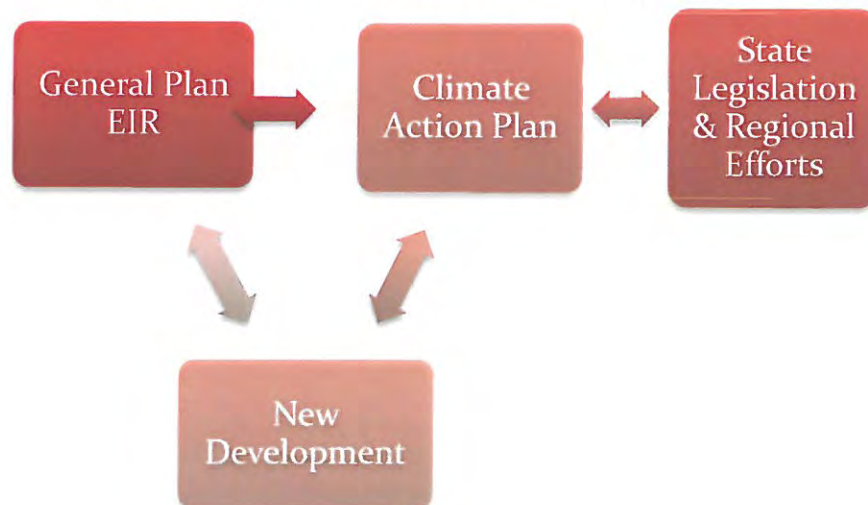
The City has also passed a resolution supporting the Partnership for Prosperity Clean Technology Initiative to attract clean technology companies to the City of Rocklin.

Climate Action Plan Purpose

The purpose of this Climate Action Plan is to identify sources of greenhouse gas emissions in the Rocklin community and provide feasible strategies to reduce these emissions. Specifically, this CAP does the following:

- ◆ Identifies and quantifies major sources of greenhouse gas emissions from activities within the City of Rocklin municipal boundary, including municipal operations and citywide activities.
- ◆ Provides feasible strategies to reduce emissions from energy use, transportation, land use, and solid waste.
- ◆ Discusses the various outcomes of reduction efforts and how these reduction efforts can be implemented and advertised.
- ◆ Mitigates the impacts of the City of Rocklin on climate change (by reducing greenhouse gas emissions consistent with the direction of the State of California via AB 32 and Governor's Order S-03-05).
- ◆ Serves as the threshold of significance within the City of Rocklin for climate change, by which all applicable developments within the City will be reviewed.

Figure 3 – Context of the CAP in Relation to Other Planning Documents and Legislation



This CAP will be an integral part of planning and development in Rocklin in the coming years. As illustrated in **Figure 3**, the CAP serves as an analytical link for the City between local development, state requirements, and regional efforts. It will also be a way for the City to determine consistency with state legislation such as AB 32 and SB 97, which mandate that local governments address greenhouse gas emissions in local planning and environmental documents.

II. Rocklin's GHG Inventory and Forecast

This chapter provides an overview of the City of Rocklin's 2008 greenhouse gas (GHG) inventory for community-wide sources. The purpose of the inventory process is to create a baseline against which future changes in emissions can be compared. The baseline also gives us an understanding of where the highest percentages of emissions are originating, and consequently, where the greatest opportunities for emissions reductions exist.

The Rocklin baseline inventory includes major sources of greenhouse gas emissions, including the following:

- ◆ Vehicle trips with origins and destinations in the City, not including through traffic
- ◆ Residential natural gas and electricity consumption
- ◆ Commercial natural gas and electricity consumption
- ◆ Waste produced in the City and sent to the landfill

While an official protocol for community-wide emissions is not yet available from the State, this inventory is consistent with current best practices for greenhouse gas inventories. Inventories are commonly restricted to energy, transportation, and waste analysis due to lack of methodology or lack of reliable data to quantify other sources of emissions. This results in the exclusion of the following emission sources:

- ◆ Construction-related emissions
- ◆ Off-road vehicle emissions
- ◆ Propane emissions
- ◆ Refrigerant emissions
- ◆ Aircraft emissions
- ◆ Sewage treatment emissions

As inventory protocol and methodology advances, these sources can be incorporated into the baseline inventory. The current emissions sources are believed to comprise the vast majority of community-wide emissions.

With regard to refrigerant emissions, as a part of its AB 32 Scoping Plan, CARB developed specifications for commercial refrigeration systems to reduce high global warming potential direct and indirect greenhouse gas emissions. Direct refrigerant emissions occur from system leaks, ruptures, installations, maintenance, and end of life, while indirect emissions occur during equipment operation as a result of energy use. To further its efforts, CARB has now partnered with the California Energy Commission (CEC) to help develop new standards for commercial refrigeration systems that will be incorporated into the CEC's Title 24 Building Energy Efficiency Standards revisions for 2011. The new standards are anticipated to be adopted in June of 2011, to be implemented on January 1, 2013.

Because new standards for commercial refrigeration systems are anticipated to become part of the Title 24 standards in the near future, this Climate Action Plan does not include any direct reduction efforts aimed at commercial refrigeration systems. However, should the Title 24 update process not proceed as anticipated and/or should the responsibility for regulating commercial refrigeration systems emissions be directed toward local governments, the City of Rocklin will consider addressing projects with commercial refrigeration systems with mitigation requirements to utilize low global warming potential (GWP) refrigerants or emission reduction efforts, as has been done previously by the City.

2008 City of Rocklin Baseline Greenhouse Gas Emissions

In calendar year 2008, activities within the geopolitical boundary of Rocklin emitted 428,001 metric tons of carbon dioxide equivalents (CO₂e) into the atmosphere. "Carbon dioxide equivalent" is a way to equalize the different potencies of the six internationally recognized greenhouse gases. For instance, methane (CH₄) has 21 times the potency of carbon dioxide (CO₂); therefore, 21 metric tons CO₂e could be 21 metric tons of carbon dioxide or 1 metric ton of methane.

Figure 4 – City of Rocklin Community-Wide GHG Emissions by Sector, 2008

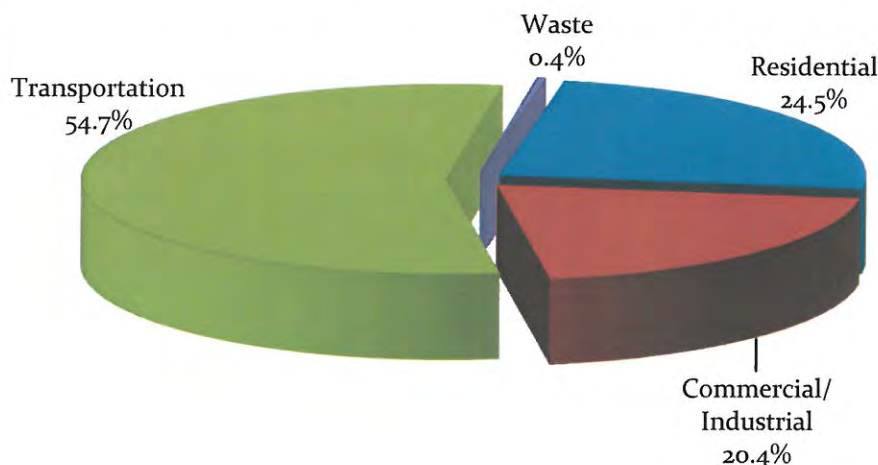


Table 1 – City of Rocklin Community-Wide GHG Emissions by Sector, 2008

2008 Baseline Greenhouse Gas Emissions	Metric Tons CO ₂ e	Percentage of Total
Residential	104,824	24.5%
Commercial/Industrial	87,364	20.4%
Transportation	234,207	54.7%
Waste	1,605	0.4%
Total	428,001	100.0%
GHG Emissions per Service Population	6.264	N/A

As illustrated in **Figure 4** and indicated in **Table 1** above, the transportation sector is responsible for the majority of emissions released within the Rocklin community (54.7%). Electricity and natural gas consumption in the residential and commercial/industrial (i.e., non-residential) sectors constitute the second largest percentage of emissions (44.9%), with waste the smallest sector (0.4%).

Figure 5 – City of Rocklin Energy Emissions by Sector, 2008

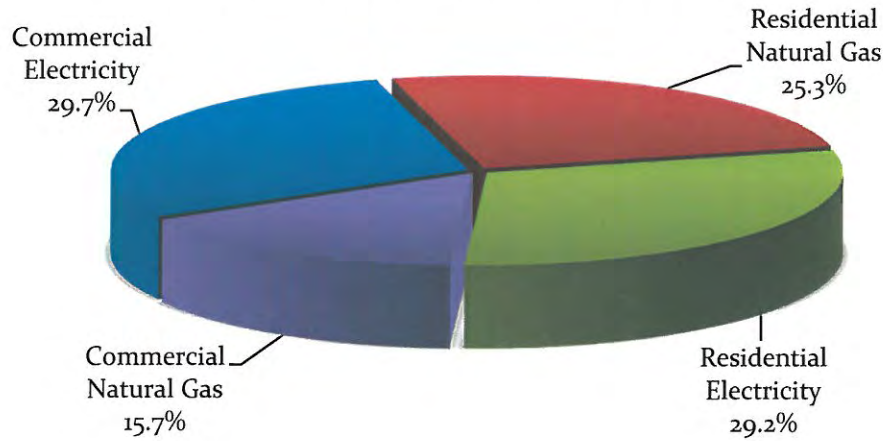


Table 2 – City of Rocklin Energy Emissions by Sector, 2008

Sector	Emissions Source	Input Data	Emissions Output (Metric Tons CO ₂ e/year)	% of Total Energy Emissions	% of Total Energy Emissions by Sector
Residential	Electricity	193,637,604 kWh/Year	56,214	29.2%	54.5%
	Natural Gas	9,159,404 Therms/Year	48,610	25.3%	
Commercial	Electricity	196,948,269 kWh/Year	57,176	29.7%	45.5%
	Natural Gas	5,688,385 Therms/Year	30,189	15.7%	
Total			192,189	100.0%	100.0%

The majority of electricity and natural gas emissions are produced by the residential sector (54.5%), with the commercial sector producing the remainder (45.5%). Commercial emissions, for the purposes of an inventory, include emissions produced by municipal operations and industrial emissions as well as retail, office, and other types of commercial entities.

For more information on the City's baseline inventory, see **Appendix A**.

2020 and 2030 General Plan Update Emissions Growth Forecast

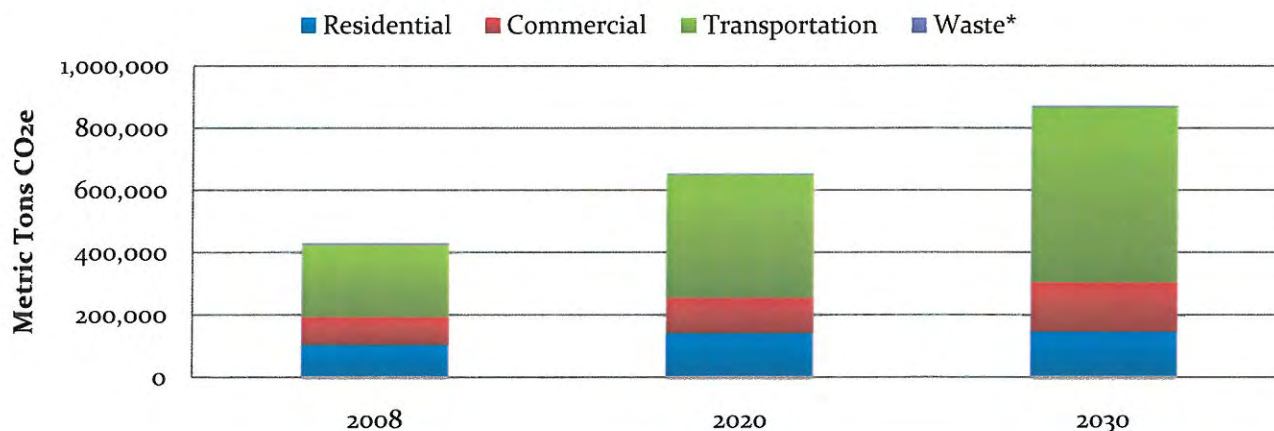
To assess the effectiveness of various reduction strategies, it is important to predict where emissions levels will be at the time of strategy implementation. To do this, “forecast years” are created to represent a snapshot of where annual emissions levels could be under various scenarios. Forecasting is completed by adjusting baseline levels of emissions consistent with household, population, commercial square footage, and transportation growth.

The basis for all growth scenarios is a business-as-usual projection. A business-as-usual projection predicts how greenhouse gas emissions will increase if behaviors and efficiencies do not change from 2008 levels, yet population, households, employment, and vehicle miles traveled in Rocklin continue to increase. The business-as-usual analysis for Rocklin is based on analysis and assumptions included in the General Plan Update buildout scenario.⁵

The General Plan Update analyzed three residential buildout scenarios, based on low, mid-range, and high growth scenarios. These scenarios are based on regional growth forecasts, recent building permit trends, and historic growth factors. The City has assumed that the mid-range growth scenario is most likely to be the accurate average over the buildout horizon. In order to project buildout of non-residential development, the City estimated the annual average absorption rate (historic) for each land use category based on an annual average of the actual growth that occurred between 1992 and 2008.

The business-as-usual General Plan Update forecast found that if energy use, waste production, and transportation trends continue as they did in 2008, emissions in the City of Rocklin will grow by 52% in 2020 and by 103% in 2030.

Figure 6 – City of Rocklin 2020 and 2030 Business-as-Usual Forecast



* Please note that waste emissions are less than 1% of total emissions and are therefore not visible at the scale of this figure.

⁵ General Plan buildout is the growth scenario under which land is developed to the maximum potential or theoretical capacity permitted by the General Plan and its land use designations.

Table 3 – City of Rocklin 2020 and 2030 Forecast

Business-as-Usual Forecast (Metric Tons CO ₂ e)	2008 Baseline	2020 Forecast (% Change)	2030 Forecast (% Change)
Residential	104,824	140,703 (+34%)	145,920 (+39%)
Commercial	87,364	114,736 (+31%)	159,126 (+82%)
Transportation	234,207	393,971 (+68%)	561,863 (+140%)
Waste	1,605	2,188 (+36%)	2,270 (+41%)
Total	428,001	651,599 (+52%)	869,178 (+103%)

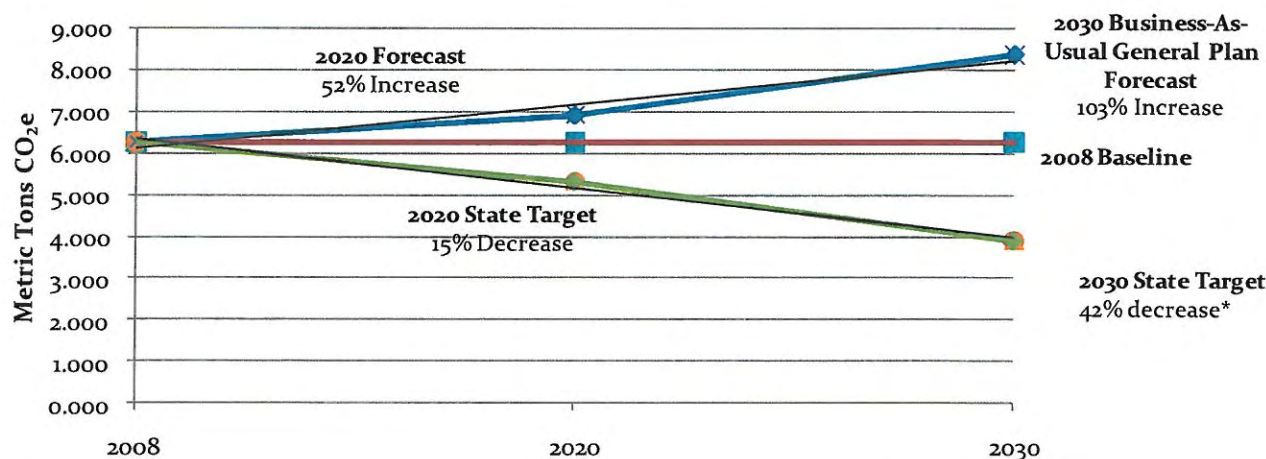
* Subtotals and totals may not equal the sum of component parts shown in this table due to rounding

State-Recommended Reduction Targets

As described in the Introduction section of this document, the California Air Resources Board (CARB) adopted an AB 32 Scoping Plan in December 2008 that recommends that local agencies adopt a reduction target of 15% below current levels by 2020. CARB has concluded that a 15% reduction from present levels is equivalent to achieving 1990 levels of greenhouse gas emissions. However, year 1990 is not recommended as a reference point in local government inventories because of a lack of reliable data.

Figure 7 below shows expected emissions growth relative to AB 32 reduction targets. It also shows 2030 emissions growth in comparison to a linear reduction target line set by Governor Schwarzenegger's Executive Order S-03-05. This Executive Order calls for an 80% reduction below 1990 levels by 2050, or approximately a 95% reduction from present levels. In 2030, a linear projection of this target would equate to approximately 42% of Rocklin's 2008 emissions.

Figure 7 – Business-as-Usual Emissions Growth and State Reduction Targets



*2030 target is an interpolation of the Executive Order S-3-05 2050 target, which establishes a target of 80% below 1990 levels by 2050.

A 15% reduction is equivalent to achieving 5.324 metric tons of carbon dioxide equivalent per service population. The Climate Action Plan presents the reduction target as a per service population metric for purposes of accuracy and simplicity. A service population metric equalizes the impact of divergent growth rates between regions and creates a clear basis for comparison with other jurisdictions. Service population emissions metrics are also consistent with Senate Bill 375 implementation (Steinberg, Chapter 728, Statutes of 2008).⁶

Figure 7 is also a depiction of Rocklin's challenge in attempting to meet state reduction targets. Emissions will continue to increase along the business-as-usual scenario while reduction efforts are initiated. The State is therefore requiring much more than a 15% decrease; the City will also need to reduce forecasted growth in emissions to achieve the reduction target. Specifically, the City will have to reduce forecasted emissions from 6.92 metric tons CO₂e per service population to 5.32 metric tons CO₂e per service population (a 29.98% decrease). In **Figure 7** above, this disparity is depicted by the difference between the blue line and the green line, both of which show projected increases or desired decreases relative to the red-colored baseline.

⁶ Regional Targets Advisory Committee. September 29, 2009. Recommendations of the Regional Targets Advisory Committee (RTAC) Pursuant to Senate Bill 375. <http://www.arb.ca.gov/cc/sb375/rtac/report/092909/finalreport.pdf>

III. Reduction Summary

This chapter summarizes the Climate Action Plan reductions for Rocklin in combination with state reduction efforts. The results described below are further explained in subsequent sections and **Appendix B**.

Climate Action Plan Reduction Summary

The magnitude of recommended state reductions relative to Rocklin's General Plan emissions forecast will require significant action at the local, regional, and state level. The Climate Action Plan consolidates these efforts into one document in order to analyze their effectiveness at reducing Rocklin's contribution to global climate change. This approach realizes the importance of large-scale coordination and confronts the fact that heavy-hitting reduction strategies like vehicle and fuel standards are almost entirely out of the hands of local government.

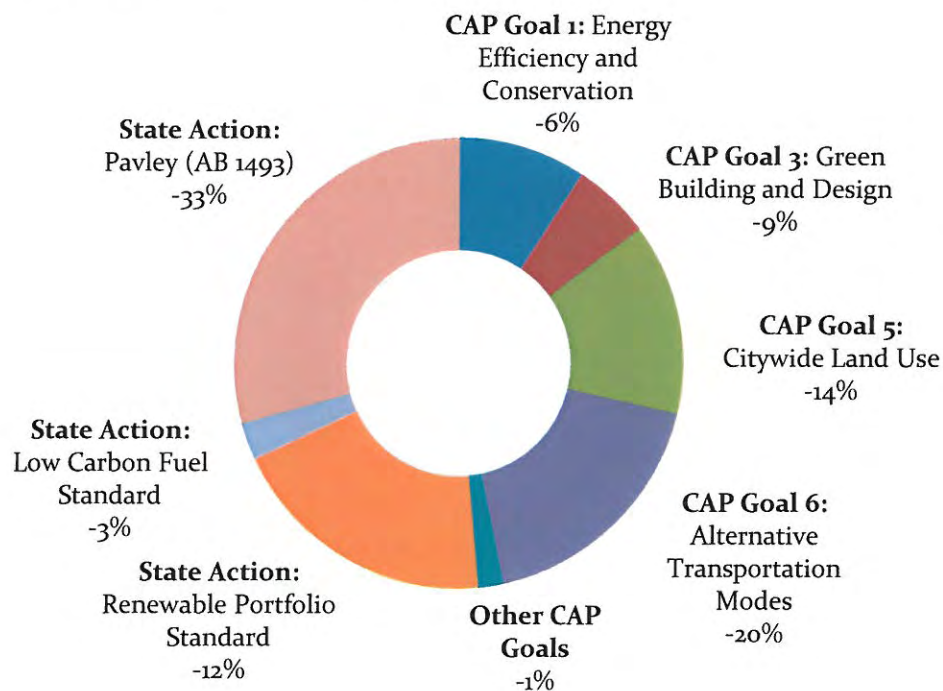
Table 4 – Summary of Climate Action Plan Reductions

City of Rocklin Climate Action Plan Greenhouse Gas Reductions (Metric Tons CO ₂ e per Service Population)		2020	2030
CAP Goals			
1	Energy Efficiency and Conservation	-0.212	-0.375
2	Renewable Energy	-0.013	-0.045
3	Green Building and Design	-0.129	-0.349
4	Downtown Rocklin	-0.004	-0.007
5	Citywide Land Use	-0.316	-0.516
6	Alternative Transportation Modes	-0.416	-0.987
7	Vehicle Efficiency and Alternative Fuels	-0.020	-0.033
8	Waste Reduction	-0.010	-0.009
Total Local Reductions		-1.119	-2.322
State Actions			
Renewable Portfolio Standard		-0.448	-0.914
Pavley (AB 1493)		-0.673	-0.878
Low Carbon Fuel Standard		-0.061	-0.176
Total State Reductions		-1.181	-1.968
Total Reductions (Local + State)		-2.300	-4.290
Business-as-Usual Emissions		6.920	8.374
Net Emissions		4.620	4.084
Percentage Change from Business as Usual		-33.24%	-51.23%
Percentage Change from 2008 Levels		-26.24%	-34.80%

As indicated in **Table 4**, the goals and measures in the CAP could result in a significant reduction from the business-as-usual General Plan Update emissions growth model. State reductions account for an almost equal portion of the reductions in Rocklin.

Local implementation of all proposed measures and state-mandated efforts would allow the City to surpass its reduction target of 15% below baseline levels by 2020. The City's reduction target is consistent with AB 32; therefore, implementation of the goals and measures in this Climate Action Plan will be consistent with the State's recommended goal for local governments. The City's 2030 reduction achievement of 34.80% from 2008 levels follows a trajectory toward the State's 2050 reduction target of 80% below 1990 levels by 2020. However, it is likely that the City's actual 2030 reduction achievement will be much greater due to the evolution of technical innovation, regulatory change, and the impacts of climate change through the next decade. For example, the State is expected to increase the standards of the Renewable Portfolio Standard (RPS), Assembly Bill (AB) 1493, and Low Carbon Fuel Standard (LCFS) after 2020.

Figure 8 – 2030 Reduction Summary by Action



Reduction Measure Summary – Local Reductions

The following eight goals and supporting measures are actions that will be implemented locally. They are summarized in greater detail in the subsequent chapters and in the appendices.

Goal 1: Energy Efficiency and Conservation

Reduce emissions from the energy sector through energy efficiency and conservation efforts in municipal and community operations.

- ◆ Energy-efficient streetlights
- ◆ Municipal energy audit and retrofit
- ◆ Energy conservation ordinance
- ◆ Public outreach

Goal 2: Renewable Energy

Reduce emissions associated with energy generation through promotion and support of alternative energy generation and use.

- ◆ Municipal solar energy
- ◆ Community renewable energy
- ◆ Renewable energy in recreation/conservation areas

Goal 3: Green Building and Design

Reduce emissions from the built environment through green building and urban design principles that minimize the urban heat island effect and reduce energy consumption.

- ◆ Green building ordinance
- ◆ Cool paving materials
- ◆ Increased tree cover

Goal 4: Downtown Rocklin

Reduce emissions through creation of a denser, more walkable urban core consistent with the Downtown Rocklin Plan.

- ◆ Mixed-use, higher-density development
- ◆ Transit-oriented development
- ◆ Pedestrian orientation

Goal 5: Citywide Land Use

Reduce vehicle miles traveled within the City of Rocklin through more efficient land use policy and design.

- ◆ Mixed-use, higher-density development, and infill development
- ◆ Jobs/housing balance
- ◆ Affordable housing

Goal 6: Alternative Transportation Modes

Reduce emissions from transportation sources through promotion of non-vehicular modes of travel.

- ◆ Non-residential bike parking
- ◆ Multi-family residential bike parking
- ◆ Bicycle routes
- ◆ Pedestrian connections
- ◆ Parking lot design
- ◆ Increased transit service
- ◆ Walking school bus program

Goal 7: Vehicle Efficiency and Alternative Fuels

Reduce emissions by promoting use of alternative fuels and the efficient use of traditional automobiles.

- ◆ Vehicle idling limitations
- ◆ Neighborhood electric vehicle links
- ◆ Prioritized parking
- ◆ Electric vehicle recharging

Goal 8: Waste Reduction

Reduce emissions from waste sources by reducing the amount of waste sent to the landfill.

- ◆ Indirect waste diversion
- ◆ Direct waste diversion

Reduction Measure Summary – State Reductions

The following are state reduction strategies included in the AB 32 Scoping Plan and accounted for in the City's adjustment of the business-as-usual General Plan Update forecast. Incorporating the strategies into the forecast and reduction assessment gives us a more accurate picture of future emissions growth and the responsibility for action.

Pavley (AB 1493)

Assembly Bill 1493 (Pavley), signed into law in 2002, requires carmakers to reduce greenhouse gas emissions from new passenger cars and light trucks beginning in 2011.

Low Carbon Fuel Standard

To reduce the carbon intensity of transportation fuels, CARB is developing a Low Carbon Fuel Standard (LCFS), which would reduce the carbon intensity of California's transportation fuels by at least 10% by 2020.

Renewable Portfolio Standard (RPS)

Established in 2002, Senate Bill 1078, the Renewable Portfolio Standard (RPS) program, requires electricity providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and to 33% by 2020.

Rocklin's Climate Action Plan and AB 32 Targets

In combination with state-mandated initiatives, the goals and measures presented in this Climate Action Plan have the potential to reduce GHG emissions by 33.24% by 2020. As indicated in **Table 4**, these efforts are estimated to reduce greenhouse gas emissions to 4.620 metric tons of carbon dioxide equivalent per service population by 2020, in comparison to a business-as-usual scenario with 6.920 metric tons of carbon dioxide equivalent per service population. These reductions are equivalent to a 26.24% change from 2008 baseline levels.

Local implementation of all proposed measures and state-mandated efforts would allow the City to surpass its reduction target of 15% below baseline levels by 2020. The City's reduction target is consistent with AB 32; therefore, implementation of the goals and measures in this Climate Action Plan will be consistent with the State's recommended goal for local governments.

How to Use This Plan

The following sections detail the eight goals of the Climate Action Plan, including anticipated greenhouse gas impacts, energy, waste, and transportation impacts, co-benefits, and fiscal impacts. Specifically, each goal section is structured with the following information:

- ◆ **Goal:** Overall objective to reduce greenhouse gas emissions in an overarching sector.
- ◆ **Existing Efforts:** Outlines existing programs in support of the goal. These efforts are the foundation for the supporting measures.
- ◆ **Supporting Measures:** Under each goal, multiple supporting measures define the specific actions that will make the overall goal become a reality. The measures are described briefly within this report, with additional information and calculation methodology in **Appendix B**.
- ◆ **General Plan Policies:** The goals and supporting measures in this plan were largely derived from existing policies within the City's

General Plan. The end of the chapter includes a reference to the General Plan policies that support or work in coordination with the goal.



The dark blue portion of this donut chart shows the portion of overall emissions reductions that are a result of the goal in question.

Reductions in 2020

Vehicle Miles: 6.120% VMT

CO₂e: 0.004% Metric Tons

The reduction in "activity data" shows the percentage reduction from total business-as-usual forecasts (energy, vehicle miles traveled (VMT), or waste) and corresponding percentage reduction in total business-as-usual carbon dioxide equivalent (CO₂e) resulting from implementation of the goal by 2020 and 2030.

Reductions in 2030

Vehicle Miles: 1.213% VMT

CO₂e: 0.007% Metric Tons

Cost Savings to the City

None

Cost and cost savings to the City for implementation, represented in high, medium, and low ranges based on best practices and similar programs. Cost figures are in 2009 dollars and are not adjusted for inflation. See below for a key to cost figures.

Cost to the City

Unknown

Potential Funding Source(s)

HUD, SACOG, Caltrans

Potential funding sources and partnerships for implementation.

Community Benefit

High

Community benefit, measured in high, medium, and low figures based on best practices.

Implementation Lead(s)

Planning and Community Development

The department or agency responsible for implementing the goal or part of a goal.

Supporting Agencies

Placer County Transit Authority, SACOG

The agency or agencies in support of the goal or portion of a goal.

One of the most helpful portions of each goal section is the summary bar located on the side of the first page of each goal summary, an example of which is provided on previous page. This bar holds information about the implementation effectiveness of each goal, including the following:

Cost and cost savings to the City in the side bar are conveyed on a high-medium-low scale to allow for error and unknown or unexpected costs or cost savings. Cost savings include energy savings, decreased maintenance costs, and more. Cost savings are represented in the following range (in 2009 dollars):

- ◆ High – Over \$60,000 per year
- ◆ Moderate – \$20,000 to \$60,000 per year
- ◆ Low – Under \$20,000 per year

Cost estimates include hard costs, such as solar panels and new streetlights, and the cost of staff time to modify policy or implement a program. Cost estimates are in 2009 dollars and are not adjusted for inflation. Furthermore, it is important to note that these costs are estimated to be expended over many years; therefore, these figures cannot be compared to the annual cost savings on an even basis. Cost to the City estimates are represented in the following range (in 2009 dollars):

- ◆ High – Over \$1 million
- ◆ Moderate – \$500,000 to \$1 million
- ◆ Low – Under \$500,000

Cost and cost savings are calculated based on case studies and the experience of industry professionals who have completed similar tasks for a jurisdiction like Rocklin.

Additional information on the assumptions and calculations behind the side bar information is included in **Appendix B**.

Goal 1: Energy Efficiency and Conservation

Reduce emissions from the energy sector through energy efficiency and conservation efforts in municipal and community operations.

Energy use currently accounts for about 45% of emissions in Rocklin. Implementation of this goal will result in significant energy reductions from the existing building stock. Many of the homes and commercial businesses in the City were built before California's strict energy efficiency standards were incorporated into Title 24 of the California Code of Regulations. This goal represents a way to target this key emissions sector.

Existing Efforts in Support of Goal 1

- ◆ The City incorporates more indirect lighting into new facility construction projects and encourages employees to reduce energy usage in existing facilities.
- ◆ In 1998, the City's Public Works Department initiated a project to replace traffic signal lights (incandescent bulbs) with light-emitting diodes (LEDs). This project was completed in 2001, and all new traffic signal lights use LED bulbs.
- ◆ The City is working with the California Energy Commission (CEC) in the Motherlode Energy Waste Program to facilitate replacement of HVAC and lighting equipment that is not energy efficient.
- ◆ Many City facilities are utilizing an HVAC energy efficiency management system.
- ◆ In 1998, the City instituted a voluntary holiday furlough program that allows City employees (except essential service personnel) to have the opportunity to take time off between the Christmas and New Year's Day holidays. More than 90% of City staff take advantage of this opportunity, which decreases energy consumption in City facilities during that furlough period.

Implementation Measures in Support of Goal 1

The following measures implement and support fulfillment of Goal 1. They are detailed further in **Appendix B**.



Reductions in 2020

Electricity: 7.958% kWh
Natural Gas: 7.597% Therms
CO₂e: 3.065% Metric Tons

Reductions in 2030

Electricity: 12.669% kWh
Natural Gas: 12.918% Therms
CO₂e: 4.486% Metric Tons

Cost Savings to the City

High (>\$60,000 per year)

Cost to the City

Moderate (\$500,000 – \$1 Million)

Potential Funding

Source(s)

The California Energy Commission Solar Financing Program

Community Benefit

High

Implementation Lead(s)

Public Works, Planning, and Building

Supporting Agencies

PG&E, California Energy Commission

Supporting Measure 1 – Energy-Efficient Streetlights

Replace City-owned streetlights and other outdoor lighting with energy-efficient alternatives. When the technology and cost-effectiveness of efficient outdoor lighting improves for the private sector, consider requirements or incentives for new development.

Recent advances in LED and induction lighting technology have resulted in new options for outdoor lighting with several advantages over former lighting technology. LEDs and induction lights can provide even, bright light using significantly less energy, providing better light quality than standard sodium lamps and better visibility of colors. Better visibility also increases street safety. LEDs have a longer life span of 10 to 12 years and less or no hazardous materials like lead or mercury.⁷ Longer life spans lead to additional long-term maintenance cost savings. Lastly, the bright, white quality of these lights increases street safety and visibility when compared to traditional high-pressure sodium or mercury halide bulbs.

Streetlight and outdoor light replacements usually pay for themselves in 5 to 10 years, depending on the rebates available. The City received over \$440,000 through the Energy Efficiency and Conservation Block Grant (EECBG) program in 2009 for replacement of 1,600 traditional streetlights with induction lights. The City anticipates the use of similar grant programs to target this highly cost-effective solution.

Supporting Measure 2 – Municipal Energy Audit and Retrofit

Implement all recommendations contained in the 2008 CEC and PG&E energy audit for municipal facilities.

In 2008, the City participated in the Motherlode Energy Watch (MEW) Energy Efficiency Program, a local government partnership administered by PG&E and the CEC that assists with energy efficiency audits. The CEC completed an energy efficiency study for the Sunset Center, library, corporation yard, community center, and administrative building. The audit, as a reduction measure, includes the reduction potential found in the report. Improvements identified in the audits include lighting improvements, boiler replacements, energy management systems, building envelope improvements, and kitchen equipment replacements.⁸

The retrofits and upgrades will result in cost savings to the City, which can be put back into the general fund. The MEW program is also available to assist with obtaining CEC loans and rebates, as well as identifying other forms of funding assistance.

This measure requires the City to implement the efficiencies outlined in the study. The City shall pursue implementation as follows:

⁷ U.S. Department of Energy Office of Energy Efficiency and Renewable Energy (EERE), http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/outdoor_area_lighting.pdf (accessed October 30, 2009).

⁸ Energy Efficiency Study for the City of Rocklin prepared by Digital Energy, Inc. for California Energy Commission (CEC) contract number 400-03-008. December 2008.

- ◆ Implement municipal upgrades based on study findings and align planned projects with audit results. This will ensure that any money the City invests in facility or operational upgrades is also directed toward energy efficiency savings.
- ◆ Consider prioritization of municipal projects and upgrades based on the energy findings in the report. The City should explore how audits can be used as a weighted form of credit in the prioritization of projects for funding, all else being equal. The audit results can be used as criteria for identifying municipal upgrades for funding.

Supporting Measure 3 – Energy Conservation Ordinance

Adopt a Residential Energy Conservation Ordinance (RECO) and Commercial Energy and Conservation Ordinance (CECO) to mandate point-of-sale energy and water efficiency audits.

Energy Conservation Ordinances (ECOs) are designed to improve energy and water efficiency in the existing building stock. They establish a mandatory minimum standard that all commercial or residential properties must meet upon sale from one owner to the next. The ordinance will require that every home, apartment building, and commercial building sold or transferred in Rocklin meets energy and water efficiency requirements for a range of building systems and features, including toilets, showerheads, water heaters, attic insulation, exterior door weather stripping, and more. Energy savings associated with ECO measures average about 20% per building.⁹ ECOs also have the potential to increase the value of commercial and residential real estate in the long run and will contribute to decreased water and energy costs for ongoing operations and use of the property.

To facilitate energy retrofits, the City shall initiate the following steps:

- ◆ Collaborate with partners or programs that offer technical and financial assistance, such as the PG&E Energy & Efficiency Partnership Program, to explore how energy efficiencies can be addressed through existing programs and funds. The City can encourage PG&E to continue and coordinate its efforts in the City to achieve this goal, using such past partnerships with PG&E as “Solar Saturday” as a platform for future efforts.
- ◆ Utilize existing partnerships to investigate adoption of ECOs, such as Build It Green. The City could use its involvement with this nonprofit as the first place to vet and explore possible ECOs and develop an ECO appropriate for Rocklin’s local conditions.
- ◆ As Phase II implementation begins, designate a committee or elected body such as the City Council to facilitate development of this program. This will entail coordination with City staff to develop recommendations for implementation.

⁹ City of Berkeley. City of Berkeley 2009 Climate Action Plan. www.BerkeleyClimateAction.org (accessed October 1, 2009).

Supporting Measure 4 – Public Outreach
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Work with PG&E and other partners to promote residential and commercial energy efficiency and conservation through energy bill inserts, public service announcements, recognition programs, and other forms of public outreach.

This measure directs the implementation of a community-wide public education campaign to inform residents, businesses, and consumers about ways that individuals can reduce their energy costs and GHG emissions.

The City shall utilize existing programs that have been initiated in the Sacramento and Placer region by PG&E and others to conduct this effort. Projects already under way with existing partnerships can be targeted to implement this measure. The City shall initiate discussions with PG&E, Build It Green, and others to establish how best to partner and achieve the measure's reduction targets through public outreach and education.

General Plan Policies in Support of Goal 1

Open Space, Conservation and Recreation-56: Encourage energy conservation in new developments.

Goal 2: Renewable Energy

Reduce emissions associated with energy generation through promotion and support of alternative energy generation and use.

Existing Efforts in Support of Goal 2

- ◆ The City constructed solar carports at its police station facility, which generate nearly 40% of the annual electricity required to operate the facility.
- ◆ The City is participating in the implementation of a universal residential solar program with neighboring jurisdictions to address residential solar programs, develop a standardized fee for residential solar installations, and create consistent information resources on green building practices for use on relevant websites.
- ◆ The City provides training opportunities for City building department and facilities staff to educate them on green building practices and programs.
- ◆ The City hosted a free, two-hour “Solar Saturday” workshop in October of 2007 in conjunction with PG&E to provide information and education to residents on residential solar technology, and hosted a similar workshop for developers in November of 2007.

Implementation Measures in Support of Goal 2

Supporting Measure 5 – Municipal Solar Energy

Promote and support the development of solar energy on municipal facilities.

This measure supports the installation of additional solar photovoltaic (PV) panels on municipal buildings, property, and parking lots. Solar PV creates clean energy that can either be entirely consumed on-site or, through recent California legislation, can also be sold back to the utility company for a profit. The California Public Utilities Commission (PUC) offers rebates and low-interest loans for solar projects throughout the state. As technology improves, solar panels are likely to become more affordable.

To implement this measure, the City shall conduct a feasibility study of installation of solar energy facilities in order to determine appropriate locations. Until an initial feasibility study is completed, it is difficult to make accurate estimations of the initial cost and greenhouse gas emissions reductions. Once



Reductions in 2020

Electricity: 0.827% kWh
Natural Gas: 0 Therms
CO₂e: 0.191% Metric Tons

Reductions in 2030

Electricity: 2.542% kWh
Natural Gas: 0 Therms
CO₂e: 0.533% Metric Tons

Cost Savings to the City

Moderate

Cost to the City

Moderate (\$500,000 – \$1 Million)

Potential Funding

Source(s)

California Energy Commission
Solar Financing Program; Clean
Renewable Energy Bonds
(CREBs), Property Assessed
Clean Energy (PACE) financing

Community Benefit

Moderate

Implementation Lead(s)

Public Works, Planning, and
Building, Parks and Recreation

Supporting Agencies

PG&E, the California Energy
Commission, the California Solar
Initiative

the feasibility study is complete, the City will investigate leveraging opportunities. For example, funding is available through the California Solar Initiative for solar and wind facilities. Local governments can also borrow money at low interest rates for solar system installation. All of these factors will need to be considered by the City in determining the best approach for this measure's implementation.

The City sets an important example in the community and can use investments in renewable energy production to set a visible public standard. Maximizing solar panel usage on City facilities is a good way to increase visibility and awareness of solar power and should be an important factor in the consideration of appropriate technologies to implement.

Supporting Measure 6 – Community Renewable Energy
--

Identify and remove barriers to small-scale, distributed renewable energy production within the community, including amendments to development codes, design guidelines, and zoning ordinances.

This measure reduces GHG emissions from residential and commercial energy use by facilitating the development of small-scale distributed renewable energy production through a multi-pronged approach of revised development codes and new forms of incentives. Development codes and permitting processes can often be a major barrier to solar and wind energy system installations. For example, many zoning codes restrict side-yard obstructions, protrusions on roofs, and siting of systems too close to streets or lot boundaries.¹⁰ Additionally, solar access protections should be put in place to ensure that the existing solar PV installations are not at risk of shading caused by new development.

This measure builds on existing City efforts. It requires a full integration of City activities in order to achieve comprehensive reductions in energy consumption throughout the community.

The City shall accomplish this measure through the following actions:

- ◆ Adopt incentives, such as permit streamlining and fee waivers, as feasible. This is an integral part of measure implementation. Allowing for easy and affordable approval processes for the installation of solar panels within the community is perhaps the easiest way the City can achieve this measure. The City could explore options like eliminating the electrical permit fees for PV panels or creating a simplified application procedure for the private installation of renewable energy facilities that includes a simple one-sheet guide for the application process.
- ◆ Amend development codes, design guidelines, and zoning ordinances, as necessary. The City should review existing regulations to remove obstacles and simplify the provision of solar and other renewable energy facilities. Further, the City should investigate and utilize a range of incentives (such as expedited processing or reduced permit fees) to encourage the installation of solar panels on carports and over parking areas or on buildings for commercial projects and new large-scale residential developments.

¹⁰ U.S. Department of Energy Office of Energy Efficiency and Renewable Energy (EERE).
http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=12920?print (accessed October 30, 2009).

- ◆ Create a municipal finance program for small and large projects. This will facilitate the private implementation of renewable energy production by providing a secure, low-interest finance mechanism that specifically funds the installation of energy efficiency improvements on private property. The City should designate a City department to explore viable options.

Supporting Measure 7 – Renewable Energy in Recreation/Conservation Areas

Allow small-scale, distributed renewable energy projects (such as solar and wind power) in areas designated Recreation/Conservation (R-C) in the General Plan Update when potentially significant impacts can be avoided or reduced to a less than significant level.

Recreation/Conservation areas are often prime locations for small-scale wind power systems and solar systems. They also serve as visible demonstrations of renewable power to the public and users of the recreation and conservation areas.

Implementation of this measure requires an upfront investment of reviewing existing standards and developing recommended ordinance revisions. Similar to the strategy required for Measure 6 (Community Renewable Energy), the City shall take the following actions to implement this measure:

- ◆ Adopt incentives, such as permit streamlining and fee waivers, as feasible. This is an integral part of measure implementation. Allowing for easy and affordable approval processes for the installation of solar panels within the community is perhaps the easiest way the City can achieve this measure. The City could explore options like eliminating the electrical permit fees for solar photovoltaic (PV) panels. The City could also create a simplified application procedure for the private installation of renewable energy facilities and even provide a simple one-sheet guide for the application process.
- ◆ Amend development codes, design guidelines, and zoning ordinances, as necessary to implement Climate Action Plan directives.

General Plan Policies in Support of Goal 2

Open Space, Conservation and Recreation-56: Encourage energy conservation in new developments.

Goal 3: Green Building and Design

Reduce emissions from the built environment through green building and urban design principles that minimize the urban heat island effect and reduce energy consumption.

Existing Efforts in Support of Goal 3

- ◆ The City has a parking lot shade tree requirement as part of its Zoning Ordinance.
- ◆ The City has an Oak Tree Preservation and Mitigation Ordinance and has conducted native oak tree reforestation and restoration projects in parks and open space and along creek channels.
- ◆ The City has adopted an Urban Forest Management Plan with specific strategies for expanding tree canopy in the City. The plan has shown that development in the City which is consistent with the City's General Plan policies and tree replacement mitigation requirements has resulted in an increase of tree canopy cover from 11% in 1952 to 18% in 2003 (a 63% increase). The plan provides a framework for the City to maintain its existing tree canopy cover and to increase it to a greater extent as development continues.
- ◆ Through the development planning process, the City has set aside a significant portion (approximately 19.4%) of City land as open space and park land. As a part of this effort, the City purchased significantly sized properties that were designated for development and reclassified them as parks and open space.
- ◆ The City is a member of the U.S. Green Building Council, a nonprofit organization dedicated to sustainable building design and construction.
- ◆ Rocklin is working toward Leadership in Energy and Environmental Design (LEED) certification for its administration and police station buildings. Efforts include changes in cleaning practices, cleaning materials and supplies, energy efficiency, and indoor environmental quality.
- ◆ The City is a member of Build It Green, a nonprofit organization focused on providing education and information to individuals and developers of residential projects on ways to utilize green technology and products to reduce energy usage, save resources, and build healthier indoor environments.



Reductions in 2020

Electricity: 5.898% kWh
Natural Gas: 3.068% Therms
CO₂e: 1.858% Metric Tons

Reductions in 2030

Electricity: 13.441% kWh
Natural Gas: 9.524% Therms
CO₂e: 4.168% Metric Tons

Cost Savings to the City

None

Cost to the City

Low (<\$500,000)

Potential Funding Source(s)

U.S. Department of Energy; U.S. EPA; Air District grants

Community Benefit

High

Implementation Lead(s)

Planning, Building, Public Works

Supporting Agencies

Build It Green (BIG), U.S. Green Building Council

- ◆ Rocklin has provided training for the City's building inspections and development staff on green building project certifications and the requirements on how to build green.

Implementation Measures in Support of Goal 3

Supporting Measure 8 – Green Building Ordinance

Adopt a mandatory Green Building Ordinance for all new development and major remodels to meet minimum green building standards. The Build It Green (BIG) GreenPoint rating system will be used for residential low-rise construction, and LEED will be used for residential high-rise and commercial construction. Require that as part of the green building checklist, applicants exceed Title 24 standards, as amended, by at least 15%. Through implementation of this ordinance, support the State's effort to achieve zero net energy homes by 2020.

A green building ordinance for the City of Rocklin can maximize occupant health, reduce operating costs, and reduce energy demand by requiring all new development and major remodels to adhere to strict building guidelines.¹¹ This measure utilizes two popular green building rating systems: Leadership in Energy and Environmental Design (LEED) and Build It Green's GreenPoint Rated. Both rating systems have their own tailored checklists and point systems for energy-efficient equipment, building siting, landscaping, and construction practices to reduce emissions, energy use, and harmful pollutants. The City's ordinance would further require that, of the multiple options for obtaining LEED or GreenPoint certification, the property owner chooses to comply with Tier 1 of the most current California Title 24 Green Building Standards Code at the time of construction. Tier 1 of Title 24 is a voluntary compliance level above the minimum standards that achieves 15% greater energy savings. Title 24 is gradually becoming more and more stringent, with the overall goal of requiring zero net energy homes by 2020.¹² It therefore may be necessary to omit Rocklin's green building standards in the future when it becomes infeasible to surpass California State Code.

To implement this measure, the City Building and Code Compliance Department shall prepare a draft green building ordinance for City Council consideration as Phase II implementation begins. The department shall also utilize resources available to the City through its membership in Build It Green to develop an appropriate ordinance that will help the City achieve its reduction targets.

Supporting Measure 9 – Cool Paving Materials

Require the use of high albedo material for future outdoor surfaces such as parking lots, median barriers, roadway improvements, and sidewalks in order to reduce the urban heat island effect and save energy.

Dark materials like asphalt absorb and retain more heat from the sun than white or reflective materials. In urban areas like Rocklin with a large amount of pavement, this can cause temperatures to increase dramatically during hot summer and fall days, which causes increased energy consumption for air

¹¹ U.S. Green Building Council (USGBC). 2009. Green Building Research. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718> (accessed November 2, 2009).

¹² California Public Utilities Commission (CPUC). 2008. California's Long-Term Energy Efficiency Strategic Plan. <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf> (accessed September 2009).

conditioning. “Albedo” is a measurement of the solar reflectivity of a material. High albedo pavements or “cool pavements” have high solar reflectivity and result in cooler urban temperatures.¹³

This measure requires the use of high albedo paving materials whenever possible in parking lots, street medians, sidewalks, and roadway improvements. According to a report by the U.S. Environmental Protection Agency (EPA), high albedo materials can be comparable in cost and durability to traditional asphalt depending upon the technology used.¹⁴ California has required white-colored material for flat roofs since 2005. Surfaces eligible for replacement with high albedo materials can include parking lots, sidewalks, driveways, and roads.

The EPA identifies multiple cool pavement technologies, many of which are similar if not lower in cost to traditional asphalt.

Supporting Measure 10 – Increased Tree Cover

Increase tree cover within the City to 30% through implementation of the City’s Urban Forestry Plan, including updated parking lot shading requirements, as well as updated Zoning Code regulations.
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This reduction measure calls for an increased urban tree cover through implementation of steps outlined in the September 2006 report entitled, “Planning for the Future of Rocklin’s Urban Forest.” The report found that Rocklin’s tree canopy cover increased from 11% in 1952 to 18% in 2003 (a 63% increase); however, additional measures are needed to retain and improve this level of tree canopy and health in the future.¹⁵

Trees reduce greenhouse gas emissions by naturally sequestering carbon dioxide and creating more oxygen. Additionally, the shade from trees helps minimize or prevent the urban heat island effect, a condition where urban surface and air temperatures are higher than rural surrounding areas due to development patterns.¹⁶ The urban heat island effect can have a large impact on local air temperatures and long-term climate patterns. Air temperature differences of approximately 3.6 to 7.2 degrees Fahrenheit have been observed for urban neighborhoods of contrasting tree cover, averaging approximately 1.8 degrees Fahrenheit per 10% canopy cover.¹⁷

This measure shall be implemented by updating the City’s Zoning Code to require a level of tree planting that will meet the targets included in Planning for the Future of Rocklin’s Urban Forest.

General Plan Policies in Support of Goal 3

Open Space, Conservation and Recreation-56: Encourage energy conservation in new developments.

¹³ Akbari, Hashem. 2009. Urban Heat Island Group Website. <http://eetd.lbl.gov/HeatIsland/> (accessed November 2009).

¹⁴ Cool Pavement Report; EPA Cool Pavements Study - Task 5. 2005. Prepared by Cambridge Systematics, Inc. for the U.S. Environmental Protection Agency (EPA). http://www.epa.gov/hiri/resources/pdf/CoolPavementReport_Former%20Guide_complete.pdf (accessed November 2009).

¹⁵ Phytosphere Research. 2006. Planning for the Future of Rocklin’s Urban Forest.

¹⁶ U.S. Environmental Protection Agency. Heat Island Effect. <http://www.epa.gov/hiri/about/index.html> (accessed October 12, 2008).

¹⁷ Scott, Simpson, and McPherson. Effects of Tree Cover on Parking Lot Microclimate and Vehicle Emissions. *Journal of Arboriculture* 24(3): May 1999, 129.

Goal 4: Downtown Rocklin Plan

Reduce emissions through creation of a denser, more walkable urban core consistent with the Downtown Rocklin Plan.

In May of 2005, property and business owners, residents, and elected officials engaged in a collaborative, weeklong process to develop a community-based vision for the future of Downtown Rocklin. The City has since developed the regulating code and implementation plan, the Downtown Rocklin Plan, which will be implemented concurrently with, or shortly after, the General Plan. The Downtown Rocklin Plan will help the City articulate an overall strategy and action plan to promote, develop, redevelop, and revitalize the downtown area.

A denser, more attractive downtown is known to reduce vehicle trips by increasing transit, biking, and walking convenience while eliminating the need for trip chaining.¹⁸ This goal further explores many of the Downtown Rocklin Plan concepts through the lens of climate change and emission reduction.

Implementation Measures in Support of Goal 4

Supporting Measure 11 – Mixed-Use Higher-Density Development

Apply a mixed-use (residential/commercial or office) land use category or overlay within the Downtown Rocklin Plan area.

Mixed-use development results in a denser, more diverse urban fabric that lowers the need for vehicle trips. The Pacific Mixed-Use Core District identified in the Downtown Rocklin Plan is slated to be the heart of Downtown Rocklin. The district will contain a mix of retail, service, office, entertainment, and residential uses. Within this district, Pacific Street will function as the “Main Street” of Downtown Rocklin. It will contain four travel lanes, on-street parking, and wide sidewalks with regularly spaced street trees, pedestrian-scaled lighting, and attractive streetscape furniture. On Pacific Street and Rocklin Road, a variety of multi-story mixed-use buildings will be built along the sidewalk edge. The buildings will contain ground-floor storefronts, restaurants, cafes, outdoor dining, and entertainment



Reductions in 2020

Vehicle Miles: 0.091% VMT
CO₂e: 0.051% Metric Tons

Reductions in 2030

Vehicle Miles: 0.144% VMT
CO₂e: 0.087% Metric Tons

Cost Savings to the City

None

Cost to the City

Low (<\$500,000)

Potential Funding Source(s)

Unknown

Community Benefit

High

Implementation Lead(s)

Planning and Building

Supporting Agencies

Placer County Transit Authority, SACOG

¹⁸ Trip chaining is a travel between any two anchors (such as work and home) that includes short, intervening trips (such as the grocery store, child care, schools, and more). Trip chaining increases fuel consumption and emissions by requiring multiple engine starts and stops. The preferred alternative to trip chaining is to park in one location where all of the necessary stops are within walking distance.

uses. Buildings along Railroad Avenue are expected to contain a variety of residential, office, and retail uses that support and complement the “Main Street” environment on Pacific Street.¹⁹

The City shall implement a comprehensive approach for incentivizing and achieving mixed-use development in Downtown. Not only does the City need to evaluate zoning regulations and incentives, but it also needs to equip the private sector and educate the public about the benefits of mixed use. Only when all sectors of the community are involved will the City successfully achieve its goal.

Following completion of the General Plan Update and subsequent modifications of the Zoning Code and other development regulations, the City will initiate implementation of this measure. While this measure relies on the same implementation strategies as Measure 14, which calls for mixed-use development citywide, this measure is addressed separately because implementation of mixed uses in Downtown Rocklin will yield a different impact than implementing mixed-use development citywide.

The City shall take the following actions to accomplish this measure:

- ◆ Address mixed-use development in the General Plan Update and direct the creation of a new overlay zone that is specific to Downtown and allows the application of unique zoning regulations in Downtown. Following the General Plan Update, a new zoning district and related regulations shall be implemented and applied to Downtown.
- ◆ Assess Downtown’s land use mix. The City will reevaluate land use types and mixes to ensure residents’ needs are met within the downtown area. This will likely build on or largely utilize work conducted as part of the General Plan Update and will be completed through appropriate updates to the Zoning Code, based on research findings. Completion of this measure will require interpreting all available information including reductions to vehicle miles traveled (VMT).
- ◆ Establish neighborhood-serving commercial services. The City will provide for neighborhood-serving commercial services within 3 miles of all residential uses in Downtown to decrease the need for single-occupancy vehicles through updates to the City’s Zoning Code.
- ◆ Focus on mixed-use, high-density, and infill development. The City will encourage the development of mixed-use, high-density, infill development near transit and amenities throughout Downtown. As part of subsequent updates to the Zoning Code to encourage mixed-use development, the City should consider appropriate incentives such as streamlined permit application procedures or increased densities where feasible or some other form of incentive.

In addition to GHG reductions, mixed-use redevelopment promotes a variety of densities and housing types, improves the livability of the community by providing amenities in close proximity to residences, and improves air quality by reducing the number of trips necessary to provide for basic household needs.

¹⁹ City of Rocklin. Downtown Rocklin Plan Regulating Code, Section 2: Downtown Districts and Permitted Uses.

Supporting Measure 12 – Transit-Oriented Development

Ensure that applications for new office and mixed-use development in the downtown area analyze the project's connection and orientation to pedestrian paths, bicycle paths, and existing transit stops within 1/2 mile of the project site. Projects must be oriented toward existing transit, bicycle, or pedestrian corridors with minimum setbacks. Applicants shall provide information demonstrating compliance with measure requirements including a site map or graphic.

Infill development in residential and commercial areas of the Downtown will be necessary to achieve the desired character and activity of Rocklin's core district. Infill development also reduces emissions by increasing density and decreasing the need for vehicular travel.

This measure would ensure that new development in the downtown area is in close proximity to existing or proposed transit or bike thoroughfares in order to decrease Rocklin's dependency on the single-occupancy vehicle. This measure is supported in the regulating code and implementation plan of the Downtown Rocklin Plan.

To implement this measure, the City shall incorporate new regulations into the Zoning Code as part of the larger General Plan Update. This measure can be addressed through site plan review, conditions of approval, or other forms of entitlements created by the Zoning Code. While this can be addressed multiple ways in the Zoning Code, an option available to the City is to update Chapter 17.72 of the Zoning Code (Design Review) to require fulfillment of this measure as part of the entitlement process.

Supporting Measure 13 – Pedestrian Orientation

Require applications for new office and mixed-use development in downtown areas to minimize setbacks from the street. Primary entrances shall be located on street frontage. Applicants shall provide information demonstrating compliance with measure requirements including a site map or graphic. Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within the Downtown Plan area and connections to other neighborhood areas. Amend the zoning code for higher density, mixed use areas. Ensure that parking facilities are not sited adjacent to public roads continuous with project sites and that functioning pedestrian entrances to major site uses are located along street frontage. Require that parking facilities do not restrict pedestrian, bicycle, or transit access from adjoining uses.

This measure will require new developments in the downtown area to analyze the project's relationship to transit during the development stage. New developments will be required to assess the project's access to transit, pedestrian corridors, and bicycle lanes to promote these methods of travel over the motorized vehicle. All of these methods promote enhanced aesthetics, reduced vehicle speeds, and safer pedestrian and bicycle environments.

The City shall update regulations within the Zoning Code to implement this measure. Zoning Code updates can be accomplished subsequent to the General Plan Update and will likely help to implement policies established in the General Plan. Updated regulations should accomplish the following:

- ◆ Establish new zoning regulations for the downtown area to minimize setbacks from the street and provide pedestrian pathways. Primary entrances shall be located on street frontage, with

parking lots designed to include clearly marked and shaded pedestrian pathways between transit facilities and building entrances. This can be addressed through new regulations in the Zoning Code that will be applied to the downtown mixed-use overlay called for by Measure 11. New development regulations specific to the overlay district will require this pedestrian orientation, and compliance will be enforced through project review.

General Plan Policies in Support of Goal 4

Land Use-3: Apply a mixed-use (residential/commercial or office) land use category or overlay within the Downtown Rocklin Plan area and other appropriate locations in the City of Rocklin.

Land Use-11: Encourage infill residential development that is in keeping with the character and scale of the surrounding neighborhood, while providing a variety of densities and housing types as reflected by the zoning and land use designations of the infill property.

Land Use-13: Review proposals for new residential development for compatibility with the character and scale of nearby neighborhoods, while providing a variety of densities and housing types as reflected by the zoning and land use designations of the infill property.

Land Use-24: Encourage mixed commercial, office, and residential land uses within the Downtown Rocklin Plan Area and other areas outside of Downtown if appropriate.

Land Use-25: Encourage mixed use developments to locate near major arterial and/or collector streets.

Land Use-26: Allow a variety of compatible commercial, service, and residential uses that will contribute to an active pedestrian environment.

Land Use-27: Allow professional offices in mixed use projects to increase employment and daytime activity in those areas.

Land Use-28: Allow uses in mixed use projects that will generate activity during evenings, nights and weekends including restaurants, cafes, nightclubs, and theaters, where appropriate.

Land Use-29: Allow a variety of housing opportunities within mixed use projects to add activity and vitality within those neighborhoods.

Land Use-30: Incorporate natural features, public spaces and plazas within mixed use areas to create focal points and areas for gathering.

Land Use-38: Maintain development standards, including off-site parking provisions, unique to the Downtown Rocklin Plan Area along streets such as Pacific Street from Midas to Farron Streets, Front Street, Rocklin Road and Railroad Avenue.

Land Use-39: Implement the Downtown Rocklin Plan to address land use mix, design features, parking, pedestrian movement, traffic and circulation, and promotion opportunities to provide a clear and strong economic identity to the core downtown area.

Land Use-40: Encourage private development of property owned by Union Pacific Railroad adjacent to their right-of-way, unless otherwise needed for public purposes, in accordance with the Downtown Rocklin Plan and Redevelopment Plan.

Land Use-51: Enhance and preserve the special natural features of the Central Rocklin, Downtown Rocklin Plan and Civic Center area to the extent feasible, including oak trees, quarries and rock outcrops.

Land Use-55: Ensure that design guidelines for the Downtown Rocklin Plan are compatible with concepts for the Civic Center area.

Goal 5: Citywide Land Use

Reduce vehicle miles traveled within the City of Rocklin through more efficient land use policy and design.

Existing Efforts in Support of Goal 5

- ◆ The City created a centrally located park-and-ride lot and another park-and-ride lot at the Sierra College Boulevard and Interstate 80 interchange.

Implementation Measures in Support of Goal 5

Supporting Measure 14 – Mixed Use, Higher Density and Infill Development

Initiate mixed-use re/development in appropriate locations throughout the City of Rocklin. Identify potential infill residential and commercial development sites within the City. Provide incentives for infill development that are in keeping with the character and scale of the surrounding neighborhood, while providing a variety of densities and housing types as reflected by the zoning and land use designation of the property.

Similar to Measure 13, which focuses on the Downtown, this measure requires minimal setbacks from the street in order to create a pedestrian-friendly environment citywide. These types of streets promote walking, biking, and transit and in many cases an increase in commercial business. This measure also employs strategies utilized for implementation of Measure 11, which calls for the establishment of mixed uses in Downtown Rocklin. Combining the approaches of both Measure 11 and Measure 13, this measure provides for mixed-use development and land uses conducive to pedestrian use throughout the entire City.

Implementation of this measure shall occur through the same strategies employed for Measures 11 and 13 by updating the City's Zoning Code, following completion of the General Plan Update.

While this measure relies on the same implementation strategies as Measure 11, which calls for mixed use in Downtown, the two measures are addressed separately because implementation of mixed use will yield different impacts citywide and in Downtown. This separation of measures acknowledges the unique characteristics of Downtown and the rest of the City.



Reductions in 2020

Vehicle Miles: 8.133% VMT

CO₂e: 4.561% Metric Tons

Reductions in 2030

Vehicle Miles: 10.168% VMT

CO₂e: 6.166% Metric Tons

Cost Savings to the City

None

Cost to the City

Unknown

Potential Funding Source(s)

HUD, SACOG, Caltrans

Community Benefit

High

Implementation Lead(s)

Planning and Community Development

Supporting Agencies

Placer County Transit Authority, SACOG

The City shall take the following actions to accomplish this measure:

- ◆ Assess the City's land use mix and reevaluating land use types and mixes to ensure residents' needs are met. This will likely build on or largely utilize work conducted as part of the General Plan Update. However, completion of this measure will require interpreting all such available information in light of reductions to VMT.
- ◆ Respond to the assessment of the City's land use mix through the General Plan Update and by updating zoning regulations to encourage a greater mix of uses. This will generally involve updates to all allowed land uses, Chapters 17.10 through 17.61 of the Zoning Code.
- ◆ Provide for neighborhood-serving commercial services within 3 miles of all residential uses to decrease the need for single-occupancy vehicles.
- ◆ Encourage the development of mixed-use, high-density, infill development near transit and amenities throughout the City. As part of subsequent updates to encourage mixed use, the City should consider appropriate incentives for mixed-use development such as streamlined permit application procedures, increased densities, or some other form of incentive.

Supporting Measure 15 – Jobs/Housing Balance

Attract job-generating land uses that will provide a variety of employment opportunities for those who live, or are likely to live, in the community or South Placer subregion.

Creating a balance of jobs in Rocklin will provide opportunities for residents to live and work in the City, thus reducing the need for long vehicle trips. This measure calls for the City to create incentives for employers to locate their businesses within Rocklin, with an emphasis on attracting a variety of jobs.

By working to improve jobs/housing balance opportunities within the community, the City will ensure that jobs and housing are provided in close proximity. This decreases the need for residents to drive for work, thus decreasing the VMT generated by the community.

The City shall achieve maximum reductions in energy for this measure as follows:

- ◆ Prepare study of incentives and implement those which are feasible.
- ◆ Review City regulations to provide incentives to projects that provide balanced employment opportunities (through retail, office, or industrial uses) and housing.

Supporting Measure 16 – Affordable Housing

Continue to support affordable housing development through implementation of the City's Housing Element.
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This measure relies on implementation of the programs established in the City's Housing Element, which requires the facilitation of adequate land zoned for housing types that accommodate all income groups. Housing types are based on housing unit numbers assigned to the City through the Regional

Housing Needs Allocation (RHNA) process. The reductions in VMT projected by this measure will result from implementation of the Housing Element.

Primary funding for implementation of affordable housing goals is provided by the Low- and Moderate-Income Housing Set-Aside Fund mandated by redevelopment law. Hence, no new action is required beyond existing actions and the standards updates to City regulations required by the City's adopted Housing Element.

General Plan Policies in Support of Goal 5

Land Use-1: Promote flexibility and innovation in new development through the use of planned unit developments, development agreements, specific plans, mixed-use projects, and other innovative design and planning techniques.

Land Use-2: Encourage a variety of building sites, building types, and land use concepts in Medium High and High Density Residential, commercial, and industrial areas that are located along major streets, rights of way, and highways/freeways.

Land Use-3: Apply a mixed-use (residential/commercial or office) land use category or overlay within the Downtown Rocklin Plan area and other appropriate locations in the City of Rocklin.

Land Use-11: Encourage infill residential development that is in keeping with the character and scale of the surrounding neighborhood, while providing a variety of densities and housing types as reflected by the zoning and land use designations of the infill property.

Land Use-13: Review proposals for new residential development for compatibility with the character and scale of nearby neighborhoods, while providing a variety of densities and housing types as reflected by the zoning and land use designation of the infill property.

Land Use-20: Encourage Medium High and High Density Residential uses to locate near major arterial and/or collector streets.

Land Use-22: Encourage neighborhood and community access through design that interconnects streets and pedestrian and bicycle pathways, allowing social interaction; access to schools, neighborhood and community parks and other open space areas; and the efficient movement of service and emergency vehicles.

Land Use-23: Prohibit gated roads that would adversely affect vehicular, bicycle and pedestrian circulation, discourage the interconnection of neighborhoods, or hinder access to public facilities and lands.

Land Use-24: Encourage mixed commercial, office, and residential land uses within the Downtown Rocklin Plan Area and other areas outside of Downtown if appropriate.

Land Use-25: Encourage mixed use developments to locate near major arterial and/or collector streets.

Land Use-26: Allow a variety of compatible commercial, service, and residential uses that will contribute to an active pedestrian environment.

Land Use-27: Allow professional offices in mixed use projects to increase employment and daytime activity in those areas.

Land Use-28: Allow uses in mixed use projects that will generate activity during evenings, nights and weekends including restaurants, cafes, nightclubs, and theaters, where appropriate.

Land Use-29: Allow a variety of housing opportunities within mixed use projects to add activity and vitality within those neighborhoods.

Land Use-30: Incorporate natural features, public spaces and plazas within mixed use areas to create focal points and areas for gathering.

Land Use-34: Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within commercial developments.

Land Use-35: Maximize internal vehicular, pedestrian and bicycle connections between adjacent commercial developments.

Land Use-42: Encourage the development of regional shopping facilities within the City of Rocklin.

Land Use-43: Attract job generating land uses that will provide a variety of employment opportunities for those who live, or are likely to live, in the community or South Placer subregion.

Land Use-56: Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within the Civic Center area and connections to other community areas.

Goal 6: Alternative Transportation Modes

Reduce emissions from transportation sources through promotion of non-vehicular modes of travel.

Existing Efforts in Support of Goal 6

- ◆ The City's Fleet Division has taken steps to reduce GHG emissions from its fleet, including creating procedures to reduce idling time, installing diesel oxidation catalysts on diesel-powered vehicles, and introducing alternative fueled E85 vehicles to the fleet.
- ◆ To reduce GHG emissions from transportation in the Rocklin community, the City has adopted a Neighborhood Electric Vehicle (NEV) Transportation Master Plan, which identifies roadways that will accommodate NEVs.
- ◆ The City requires electric vehicle recharging stations on appropriate development projects.
- ◆ The City has also created a centrally located park-and-ride lot and another park-and-ride lot at the Sierra College Boulevard and Interstate 80 interchange.
- ◆ Capital Improvement Projects currently include adding bike trails and sidewalks to various areas throughout the City.
- ◆ Placer County Transit provides the Placer Commuter Express service to Downtown Sacramento.

Implementation Measures in Support of Goal 6

Supporting Measure 17 – Non-Residential Bike Parking

Require non-residential projects to provide short-term and long-term bicycle parking facilities. Short-term facilities shall be provided at a minimum ratio of one bike rack space per each 20 required vehicle parking spaces up to 100 vehicle spaces for new construction. For each additional 100 required vehicle parking spaces or portion thereof, one bike rack shall be provided. A bike rack shall consist of a minimum of one two-bike capacity rack. Long-term facilities shall be provided at a minimum ratio of one long-term bicycle storage space per 20 parking spaces. Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is monitored by video surveillance 24 hours per day

One of the major barriers to bicycle travel is convenient and safe bicycle parking at common destinations. This measure makes it a requirement for new non-residential developments to provide a minimum ratio of one bike rack per each 20 required vehicle parking spaces up to 100 vehicle parking



Reductions in 2020

Vehicle Miles: 10.730% VMT
CO₂e: 6.017% Metric Tons

Reductions in 2030

Vehicle Miles: 19.446% VMT
CO₂e: 11.792% Metric Tons

Cost Savings to the City

None

Cost to the City

Unknown

Potential Funding Source(s)

Caltrans; Safe Walks to School

Community Benefit

High

Implementation Lead(s)

Planning and Community Development

Supporting Agencies

Placer County Transit Authority, SACOG

spaces. Employers will provide an additional storage space per 20 parking spaces. Providing adequate bike parking for non-residential uses facilitates an increase in travel by bike rather than by vehicle. In addition to GHG reductions, the measure also promotes a healthful lifestyle and reduced commuting costs for individuals, alleviates traffic congestion, and improves local air quality.

To implement this measure, the City shall expand existing Zoning Code regulations in Chapter 17.66 (Off-Street Parking) to ensure a higher provision of bicycle parking in non-residential uses. This can be accomplished subsequent to the General Plan Update in conjunction with other updates called for by the General Plan.

Supporting Measure 18 – Multi-Family Residential Bike Parking
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Require bicycle parking for new multi-family residential construction. Long-term facilities shall be provided at a ratio of one long-term bicycle parking space for every 10 units without a garage. Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is monitored by video surveillance 24 hours per day.
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Multi-family residential units often lack space for bicycle storage within the unit. Furthermore, it is often against rental leases to store bicycles in a unit. This measure calls for safe and convenient bicycle parking facilities in all new multi-family dwellings and requires that one long-term bicycle space be provided for every 10 multi-family units without a garage. These facilities can be used by guests and residents. By providing sufficient bike parking for multi-family uses, bike travel can account for a greater proportion of all multi-family trips from the home. Similar to other measures included in this Climate Action Plan, in addition to GHG reductions, the measure also promotes a healthful lifestyle and reduced commuting costs for individuals, alleviates traffic congestion, and improves local air quality.

The City shall implement this measure in conjunction with Measure 17, Commercial Bike Parking, by expanding existing Zoning Code regulations in Chapter 17.66 (Off-Street Parking).

Supporting Measure 19 – Bicycle Routes

Provide a safe and convenient system of bicycle routes and pedestrian ways by increasing the miles of bike paths and lanes within the City, increasing signage, and ensuring intersection improvements are bicycle-friendly.
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According to an inventory of Rocklin bike lanes in 2009, the City currently has over 50 miles of bike lanes. The City proposes adding approximately 16 more miles of bike lanes to increase connectivity between existing bike lanes and to create a comprehensive bicycle network. This measure quantifies the emissions reductions from vehicle trips replaced by bicycle trips as a result of the improved bikeway conditions in the City. In addition to GHG reductions, the measure also promotes a healthful lifestyle and reduced commuting costs for individuals, alleviates traffic congestion, and improves local air quality.

To implement this measure, the City shall require development to accommodate and construct designated bikeways and paths as set forth in the City's General Plan Bikeways Diagram.

Supporting Measure 20 – Pedestrian Connections

Promote pedestrian convenience and recreational opportunities through development conditions requiring sidewalks, walking paths, or hiking trails connecting various land uses including residential areas, commercial areas, schools, parks, employment centers, and open space.

This measure is based on General Plan policies that promote pedestrian convenience and recreational opportunities. In addition to GHG reductions, the measure also promotes a healthful lifestyle and reduced commuting costs for individuals, alleviates traffic congestion, and improves local air quality.

- ◆ The City shall implement this measure through development conditions. Development conditions of approval required for all new development projects meeting certain criteria will include sidewalks, walking paths, or hiking trails. Staff shall conduct a study to determine if several tiers of regulations are required for various types of projects to adequately implement this measure.
- ◆ To aid developers in implementing this measure and Zoning Code regulations, the City may consider providing graphics, maps, or other examples of pedestrian connections envisioned by the City within the Zoning Code and/or other appropriate document(s) or as supplemental handout sheets. This will ease implementation of the measure and help developers efficiently address City regulations.

Supporting Measure 21 – Parking Lot Design

For new, large commercial and/or office development, require parking lot designs that include clearly marked and shaded pedestrian pathways between the sidewalk and/or transit facilities and building entrances. Site plans should demonstrate how pathways are clearly marked, shaded, and are placed between where the sidewalk and/or transit facilities and building entrances are located.

This measure requires new commercial and office developments to create a clear pathway between the sidewalk and/or transit facility and the building entrance. This design feature increases pedestrian convenience and shifts some of the focus of the development from automobiles to pedestrians, thus highlighting the transit and pedestrian accessibility of the location. In addition to promoting transit and pedestrian travel, this measure will increase pedestrian safety in parking lots.

The City shall implement this measure in conjunction with other updates that will be required as part of the General Plan Update. The City shall also establish new site design criteria for all parking lots that are addressed in Chapter 17.66 (Off-Street Parking).

Supporting Measure 22 – Increased Transit Service

Work with transit providers to plan, fund, and implement additional transit services that are cost-effective and responsive to existing and future transit demand.

This measure quantifies increased use of the existing transit network based on population growth and makes an assumption of the jump in ridership due to new bus and rail transit options planned in the

Sacramento Metropolitan Transportation Plan (MTP) 2035. New transit network components in the SACOG MTP include, but are not limited to, the following:

- ◆ A commuter rail line between Yolo, Placer, and Sacramento regions with Placer stops in Roseville and Rocklin at 30-minute intervals.
- ◆ Bus Rapid Transit (BRT)/Enhanced Bus between Rocklin and Roseville to Sacramento via North Watt Avenue, Blue Oaks Boulevard, Pleasant Grove Road, and Galleria Boulevard.
- ◆ Additional express buses connecting the cities of Lincoln, Rocklin, and Roseville to Sacramento via the I-80 and State Route 65 carpool lanes with increased frequencies.
- ◆ Sierra College bus stop improvements, Placer County Transit Preventive Maintenance and ADA Service, Multi-Modal Station Park-and-Ride Lot (Rocklin), and UP Third Track.
- ◆ Additional new transit that includes increased ADA/paratransit, neighborhood shuttles, increased local bus services throughout the area, and freeway express bus services.

The SACOG MTP concludes that transit ridership will grow from 1% to 1.2% of all transit trips within the region between now and 2035.²⁰ Rocklin will directly benefit from the MTP projects, some of which are noted above, and residents will benefit from greater transit opportunities.

Placer County Transit reported 317,783 passengers in 2008. According to a rider survey, 32.9% of riders live in Rocklin. Assuming constant ridership per community served by Placer County Transit, Rocklin's 2009 transit ridership is approximately 104,550.6 ($317,783 * .329$). Based on this data, Rocklin could have approximately 20,000 new transit riders by 2030.²¹

To implement this measure, no additional actions are required from the City, beyond supporting the regional transit plans established in the SACOG MTP, contributing funding to Placer County Transit each year, and providing extra publication or incentives as needed and requested.

Supporting Measure 23 – Walking School Bus Program

Implement a walking school bus program to provide a supervised, safe, and timely commuting alternative for children.
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This measure actively promotes walking as a safe mode of local travel, particularly for children attending local schools. Other measures that improve safety include employing traffic calming methods such as median landscaping and provision of bike or transit lanes to slow traffic, improving roadway capacity, and addressing safety issues. Creating walking school buses, or adult-supervised groups of

²⁰ Sacramento Area Council of Governments (SACOG). 2008. Metropolitan Transportation Plan 2035. Chapter 4, page 45.

²¹ Placer County, California. <http://www.placer.ca.gov/News/2008/July/PlacerTransitRidershipUp.aspx>, and <http://www.placer.ca.gov/Departments/Works/Transit/PCT/~media/dpw/pct/documents/2008PCESurveySummary%20Responses.ashx>.

children walking to school, can provide financial savings to schools and parents, help reduce parking and traffic problems, reduce pollution, and provide safety and health benefits.

According to 2008 census data, approximately 10,100 school age children live in Rocklin (ages 6–18). Until a few decades ago, most grade school students walked or bicycled to school. Now, only a small portion (typically about 10%) walk or bicycle to school. Travel to school represents 10–15% of peak period motor vehicle trips in many urban areas. Chauffeuring children to school often results in two vehicle trips, one to the school and one returning home, or four additional trips per day. There are currently few detailed studies of the effectiveness of school transport management programs like walking school buses, but anecdotal evidence indicates that total reductions in automobile trips of 10–20% or more are possible, with much greater reductions when schools are sited and designed for good accessibility.

To implement this measure, the City shall take the following actions:

- ◆ Facilitate creation of a formal walking school bus program. The City shall coordinate with schools or the representative Parent-Teacher Association to create this program. Parents would volunteer to meet students at select locations and chaperone them to school on a pre-established route.

General Plan Policies in Support of Goal 6

Land Use-22: Encourage neighborhood and community access through design that interconnects streets and pedestrian and bicycle pathways, allowing social interaction; access to schools, neighborhood and community parks and other open space areas; and the efficient movement of service and emergency vehicles.

Land Use-23: Prohibit gated roads that would adversely affect vehicular, bicycle and pedestrian circulation, discourage the interconnection of neighborhoods, or hinder access to public facilities and lands.

Land Use-33: Ensure that adequate parking and vehicle, bicycle and pedestrian access are included in approved commercial development plans.

Land Use-34: Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within commercial developments.

Land Use-35: Maximize internal vehicular, pedestrian and bicycle connections between adjacent commercial developments.

Open Space, Conservation and Recreation-27: Establish Class I bikeways where feasible along public roadways when roadways are adjacent to open space and parkland.

Open Space, Conservation and Recreation-28: Integrate, to the extent practical, the City's bike and trails network with trails in adjacent jurisdictions and the region.

Circulation-2: Coordinate land use and transportation planning to support transit services, NEV facilities and non-motorized transportation.

Circulation-3: Promote the use of Neighborhood Electric Vehicles (NEV) by providing accommodations (i.e., lane striping and signage) to facilitate the use of these vehicles where feasible within existing and planned rights-of-way.

Circulation-4: Promote the use of non-motorized transportation by providing a system of bicycle routes and pedestrian ways.

Circulation-5: Coordinate with public transit providers to meet residents' needs.

Circulation-6: Encourage non-residential development proposals to incorporate features that promote ridesharing or use of alternative transportation modes.

Circulation-50: Work with transit providers to plan, fund and implement additional transit services that are cost-effective and responsive to existing and future transit demand.

Circulation-51: Promote the use of public transit through development conditions such as requiring park-and-ride lots, bus turnouts and passenger shelters along major streets.

Circulation-52: Require landscaping and tree planting along railroad right-of-way and along existing streets as appropriate.

Circulation-53: Support the expansion of intercity rail passenger services, such as the Capitol Corridor, and implementation of regional rail passenger services.

Circulation-54: Support the study of developing rail passenger services within the Highway 65 corridor.

Circulation-55: Require Class II bike lanes in the design and construction of major new streets and to establish bike lanes on those City streets wide enough to accommodate bicycles safely.

Circulation-56: Improve bicyclist and pedestrian safety through such methods as signage, lighting, traffic controls, and crosswalks.

Circulation-57: Maintain the Rocklin Bikeway Diagram and update it as necessary with the approval of major new developments and/or general plan amendments not considered in the adopted Diagram.

Circulation-58: Consult with adjacent jurisdictions regarding the development of regional bikeway and NEV links.

Circulation-59: Promote pedestrian convenience and recreational opportunities through development conditions requiring sidewalks, walking paths, or hiking trails connecting various land uses including residential areas, commercial areas, schools, parks, employment centers and open space.

Circulation-60: Consider NEV routes in the design and construction of major new streets and to consider the establishment of NEV routes on existing City streets wide enough to accommodate NEV lanes.

Goal 7: Vehicle Efficiency and Alternative Fuels

Reduce emissions by promoting use of alternative fuels and the efficient use of traditional automobiles.

Existing Efforts in Support of Goal 7

- ◆ The City's Fleet Division is taking steps to reduce the City's carbon footprint by installing diesel oxidation catalysts on its diesel-powered vehicles and equipment. The division is also purchasing alternative fueled vehicles that will use E85 and has implemented procedures to reduce engine idling time.
- ◆ The City requires electric vehicle recharging stations on appropriate development projects.
- ◆ The City has adopted a Neighborhood Electric Vehicle (NEV) Transportation Master Plan, which identifies roadways that will accommodate NEVs.
- ◆ The City will be implementing preferred parking for carpoolers and alternative fuel vehicles at its administration building.

Implementation Measures in Support of Goal 7

Supporting Measure 24 – Vehicle Idling Limitations

Adopt a vehicle idling ordinance to restrict idling by commercial vehicles, construction vehicles, buses, and other similar vehicles, beyond restrictions required by state law.

This measure reduces GHG emissions from transportation sources by implementing vehicle idling limitations for commercial and construction vehicles and buses beyond those limitations required by state law. The law currently limits construction and heavy-duty vehicles (over 10,000 pounds) to 5 minutes of idling time. This measure calls for increased outreach to local enforcement agencies to educate them so they are able to identify violators and enforce anti-idling regulations. It also calls for enforcement to target areas of high concentration for idling. This measure will also lead to reduced time and costs associated with travel.

The following steps shall be initiated by the City to implement this measure:

- ◆ As Phase II implementation begins, prepare a draft vehicle idling ordinance to be adopted by City Council. City staff can use other model ordinances, which can be addressed with other amendments to City code required by the General Plan Update.
- ◆ Enforcement officers shall be briefed on new requirements.



Reductions in 2020

Vehicle Miles: 19.446% VMT
CO₂e: 11.792% Metric Tons

Reductions in 2030

Vehicle Miles: 19.446% VMT
CO₂e: 11.792% Metric Tons

Cost Savings to the City

None

Cost to the City

Unknown

Potential Funding

Source(s)

Air District Grants

Community Benefit

Moderate

Implementation Lead(s)

Planning, Public Works, and Police

Supporting Agencies

Placer County Transit Authority,
City of Lincoln

- ◆ As Phase II implementation begins, the City shall delegate the task of implementing a study on priority areas for enforcement. This can be an informal study, but shall ultimately be designed to inform code enforcement officers of areas within the City that require additional attention for enforcing the new ordinance.

Supporting Measure 25 – Neighborhood Electric Vehicle (NEV) Links

Coordinate the development of regional bikeway and NEV links with adjacent jurisdictions as outlined in the NEV Transportation Master Plan.

The City adopted the NEV Transportation Plan in February 2008 to identify roadways that will accommodate neighborhood electric vehicles. The NEV Transportation Master Plan could be most cost-effectively implemented using the following phased approach:

- ◆ Phase 1: Develop NEV routes on roads that are scheduled to be repaved as part of the City's pavement rehabilitation program. New striping and sign installation would be incorporated into the scheduled repaving.
- ◆ Phase 2: Apply for grant money to pay for the removal of old striping and the installation of new signs and striping on roads that are not scheduled to be repaved. As the money becomes available, portions of the plan could be implemented.

As implementation of the NEV Transportation Master Plan would also improve local air quality, it could also be eligible for clean air grant funds.

In addition to GHG reductions, implementation of the NEV Transportation Master Plan will also result in improved air quality, community cohesion, energy savings, reduced travel costs, increased mobility, and independence for aging drivers.

Supporting Measure 26 – Prioritized Parking

Offer prioritized parking for carpools, alternative fueled vehicles, and NEVs in high-traffic areas.

This measure calls for prioritized parking in high-traffic areas for carpool vehicles, NEVs, and hybrid or alternatively fueled vehicles. This would be a way of incentivizing the purchase of these types of vehicles. The City would designate priority parking spots and work with the Police Department to ensure enforcement. This measure would require a change to the City's Municipal Code as well as coordination with parking enforcement. In addition to staff time, costs would include construction and signage for the parking spots.

Supporting Measure 27 – Electric Vehicle Recharging

Require existing electric vehicle recharging stations to be updated with current technology upon major remodel of the establishment (>25% of the appraised cost of the facility).

Electric vehicle technology has changed significantly through the years. Many electric recharging stations installed in recent years are no longer appropriate for current models. The industry is now getting to a point where electric vehicle recharging is being standardized. Measure 27 will require existing recharging stations to be upgraded to the most current standards upon major remodel. This will allow the recharging stations to be used to the maximum extent possible.

General Plan Policies in Support of Goal 7

Land Use-22: Encourage neighborhood and community access through design that interconnects streets and pedestrian and bicycle pathways, allowing social interaction; access to schools, neighborhood and community parks and other open space areas; and the efficient movement of service and emergency vehicles.

Land Use-23: Prohibit gated roads that would adversely affect vehicular, bicycle and pedestrian circulation, discourage the interconnection of neighborhoods, or hinder access to public facilities and lands.

Land Use-24: Encourage mixed commercial, office, and residential land uses within the Downtown Rocklin Plan Area and other areas outside of Downtown if appropriate.

Land Use-25: Encourage mixed use developments to locate near major arterial and/or collector streets.

Land Use-26: Allow a variety of compatible commercial, service, and residential uses that will contribute to an active pedestrian environment.

Land Use-33: Ensure that adequate parking and vehicle, bicycle and pedestrian access are included in approved commercial development plans.

Land Use-34: Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within commercial developments.

Land Use-35: Maximize internal vehicular, pedestrian and bicycle connections between adjacent commercial developments.

Open Space, Conservation and Recreation-27: Establish Class I bikeways where feasible along public roadways when roadways are adjacent to open space and parkland.

Open Space, Conservation and Recreation-28: Integrate, to the extent practical, the City's bike and trails network with trails in adjacent jurisdictions and the region.

Circulation-2: Coordinate land use and transportation planning to support transit services, NEV facilities and non-motorized transportation.

Circulation-3: Promote the use of Neighborhood Electric Vehicles (NEV) by providing accommodations (i.e., lane striping and signage) to facilitate the use of these vehicles where feasible within existing and planned rights-of-way.

Circulation-4: Promote the use of non-motorized transportation by providing a system of bicycle routes and pedestrian ways.

Circulation-5: Coordinate with public transit providers to meet residents' needs.

Circulation-6: Encourage non-residential development proposals to incorporate features that promote ridesharing or use of alternative transportation modes.

Circulation-11: Continue to participate with adjacent jurisdictions toward the completion and improvement of streets that extend into other communities through individual cooperation and/or use of the Placer County Transportation Planning Agency (PCTPA), joint powers authorities, and similar entities.

Circulation-22: Interconnect traffic signals and/or consider the use of roundabouts where financially feasible and warranted to provide flexibility in controlling traffic movements at intersections.

Circulation-23: Require street designs where appropriate to connect to neighborhoods. These connections allow for vehicular and pedestrian use and for the efficient movement of service and emergency vehicles.

Circulation-34: Provide for the extension of Dominguez Road over I-80 as a future improvement to relieve the Sierra College Boulevard/I-80 and Rocklin Road/I-80 interchanges and create access to the southeast quadrant of the Sierra College Boulevard/I-80 interchange.

Circulation-35: Increase traffic capacity at Rocklin Road and I-80, as traffic conditions require, by widening, overcrossings, or other design features, to allow more efficient traffic movement and pedestrian and bike facilities.

Circulation-36: Develop a new east/west road connection between State Route 65 and Sierra College Boulevard. The road shall traverse the Northwest Rocklin area, connect to Park Drive in the northern section of Whitney Oaks, and extend from Park Drive through Clover Valley to intersect with Sierra College Boulevard.

Circulation-37: Develop a new north/south road connection between Sunset Boulevard and the new east/west connection described in Policy C-36.

Circulation-38: Provide primary vehicular access to future development within the Parcel K planning area of the North West Rocklin General Development Plan by at least two points of access. The access points shall consist of one street that intersects with Wyckford Boulevard and another that connects to the extension of Kali Place. These facilities shall be open non-gated public streets.

Circulation-40: Provide for the connection of Woodside Drive and Ruhkala Road in the Civic Center area.

Circulation-41: Create a Civic Center street/drive network south of Rocklin Road that provides access to Pacific Street and South Grove Street.

Circulation-42: Improve and extend Railroad Avenue between Farron Street and Midas Avenue to provide an alternative north/south route to Pacific Street.

Circulation-45: Extend Monument Springs Drive southerly across Secret Ravine Creek to developing areas south of Greenbrae Road.

Circulation-50: Work with transit providers to plan, fund and implement additional transit services that are cost-effective and responsive to existing and future transit demand.

Circulation-51: Promote the use of public transit through development conditions such as requiring park-and-ride lots, bus turnouts and passenger shelters along major streets.

Circulation-52: Require landscaping and tree planting along railroad right-of-way and along existing streets as appropriate.

Circulation-53: Support the expansion of intercity rail passenger services, such as the Capitol Corridor, and implementation of regional rail passenger services.

Circulation-54: Support the study of developing rail passenger services within the Highway 65 corridor.

Circulation-55: Require Class II bike lanes in the design and construction of major new streets and to establish bike lanes on those City streets wide enough to accommodate bicycles safely.

Circulation-56: Improve bicyclist and pedestrian safety through such methods as signage, lighting, traffic controls, and crosswalks.

Circulation-57: Maintain the Rocklin Bikeway Diagram and update it as necessary with the approval of major new developments and/or general plan amendments not considered in the adopted Diagram.

Circulation-58: Consult with adjacent jurisdictions regarding the development of regional bikeway and NEV links.

Circulation-59: Promote pedestrian convenience and recreational opportunities through development conditions requiring sidewalks, walking paths, or hiking trails connecting various land uses including residential areas, commercial areas, schools, parks, employment centers and open space.

Circulation-60: Consider NEV routes in the design and construction of major new streets and to consider the establishment of NEV routes on existing City streets wide enough to accommodate NEV lanes.

Goal 8: Waste Reductions

Reduce emissions from waste sources by reducing the amount of waste sent to the landfill.

Existing Efforts in Support of Goal 8

- ◆ The City's facility maintenance operations use recycled paper products in restrooms and maintenance activities throughout City facilities. In addition, products used for cleaning facilities are "green-seal certified," designating that they are environmentally friendly.
- ◆ The City is an active partner in the Placer County Materials Recovery Facility (MRF) that supports recycling of household and business waste. The MRF diverts over 50% of the solid waste generated within the City from landfill disposal, consistent with the requirements of AB 939.
- ◆ The City has implemented an environmental purchasing plan with the objectives of instituting practices that reduce waste by increasing product efficiency and effectiveness. This plan includes purchasing products that minimize environmental impacts, have no toxics, do not pollute, and are not hazards to worker or community safety to the greatest extent practical. The plan also employs purchasing products that include recycled content, are durable and long-lasting, conserve energy and water, use agricultural fibers and residues, reduce greenhouse gas emissions, use unbleached or chlorine-free manufacturing processes, are lead-free and mercury-free, and use wood from sustainable harvested forests.
- ◆ The City utilizes untreated water for irrigation purposes in some locations, which lowers energy use needed for water treatment and filtration.
- ◆ In 1998, the City Council approved a plan to reduce water use in City street landscaping by removing turf and replacing it with drought-tolerant plants, which the Public Works Department continues to implement.
- ◆ The City requires developers to plant drought-tolerant plants and install drip irrigation along streetscapes in new projects.
- ◆ The City requires development projects' landscape plans to include an automatic irrigation system, and the use of drip irrigation is encouraged. Project landscape plans are also required to be certified by a licensed landscape architect as meeting the requirements of the Water Conservation in Landscaping Act (Government Code Section 68591, et seq.).



Reductions in 2020

Waste: 42.766% Tons
CO₂e: 0.144% Metric Tons

Reductions in 2030

Waste: 42.767% Tons
CO₂e: 0.112% Metric Tons

Cost Savings to the City

None

Cost to the City

Unknown

Potential Funding Source(s)

CalRecycle (formerly known as the California Integrated Waste Management Board)

Community Benefit

Moderate

Implementation Lead(s)

Planning, Public Works

Supporting Agencies

Western Placer Waste Management Authority (WPWMA)

Implementation Measures in Support of Goal 8

Supporting Measure 28 – Indirect Waste Diversion

Work with the Western Placer Waste Management Authority (WPWMA) and Materials Recovery Facility (MRF) to include more types of waste in the MRF sorting and recycling process.

All waste generated in the community is sent to the Materials Recovery Facility (MRF) operated by the Western Placer Waste Management Authority (WPWMA). The MRF, which opened in 1995, receives, separates, processes, and markets recyclable materials removed from delivered solid waste. Recyclables captured at the MRF include:

- ◆ Wood/green waste processed for compost and woodchips
- ◆ Metal – ferrous/metallic items
- ◆ Plastic – many grades
- ◆ Glass – all colors
- ◆ Paper – newspaper, junk mail, phonebooks, magazines, scrap paper, paperboard, cardboard

Under this measure, the WPWMA would begin to sort and divert other types of waste, including food products, meat, and paper products for composting. The WPWMA would also consider recycling additional grades of plastic.

The City shall initiate discussions with WPWMA and explore ways in which it could encourage the WPWMA in pursuing these expanded diversion goals.

Supporting Measure 29 – Direct Waste Diversion

Increase the amount of waste recycled directly from the community through increased outreach, expansion of recycling drop-off centers and hours of operation, and increasing the types and amount of waste accepted.

The City of Rocklin currently achieves recycling and waste diversion in two ways:

- 1) Sorting and diversion at the Materials Recovery Facility (MRF)
- 2) Direct recycling of materials such as glass, aluminum, and plastic beverage containers, cardboard, newspaper, and e-waste at recycling drop-off centers or through special programs developed in conjunction with Recology Auburn Placer (formerly Auburn Placer Disposal Service)

It is important to note that the City of Rocklin is not in direct control of waste diversion efforts. The City has a franchise agreement with Recology Auburn Placer for solid waste handling services. As a part of this agreement, the City has a Franchise Implementation Plan (FIP) that sets forth the service program. Given the FIP, the City can request from Recology Auburn Placer to have additional containers placed at City facilities. For e-waste, the City coordinates with Recology Auburn Placer for special e-waste

collection events/days, but only on a quarterly basis (maximum). For battery disposal, the City could coordinate with the Saxton Foundation and Recology Auburn Placer to provide more collection containers to the community.

This measure calls for more waste to be directly diverted to recycling drop-off centers and special recycling event locations through increased public education and by improving the convenience of drop-off centers and special recycling programs.

To implement this measure and provide additional recycling drop-off centers and recycling programs by March 2013 and yearly thereafter, the City shall update the Solid Waste Franchise Implementation Plan to include new programs and expand existing programs, when cost-efficient and feasible, to take the following steps:

- ◆ Place new recycling containers at locations identified as the most convenient and accessible for recycling drop-off of materials not currently being diverted to the recycling stream.
- ◆ Utilize both the City of Rocklin and Recology Auburn Placer public communications programs and websites to inform the public regarding recycling drop-off locations and special events that provide recycling opportunities for materials not being captured by current recycling systems and programs.
- ◆ Conduct yearly monitoring of the amount of waste collected and adjust the Solid Waste Franchise Implementation Plan as needed.

General Plan Policies in Support of Goal 8

Public Services and Facilities-29: Require solid waste collection services to ensure the maintenance of health standards.

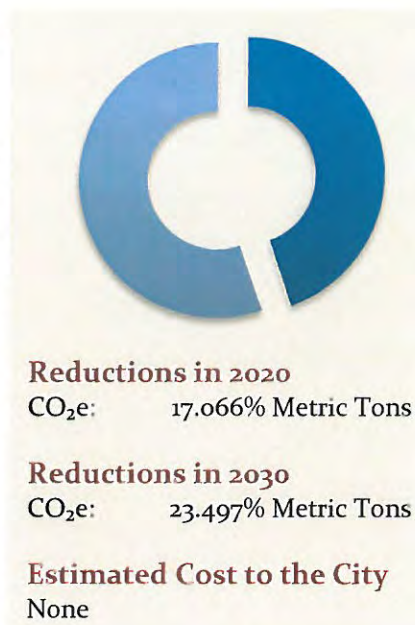
Public Services and Facilities-30: Support public education programs in order to reduce, recycle, and reuse solid waste and other materials such as oil, paint, antifreeze in order to reduce landfill disposal.

Public Services and Facilities-31: Encourage new commercial and industrial development to incorporate recycling programs into their construction and operations.

Impact of State Reduction Efforts

State Initiatives: An Integral Partner in Our Reduction Efforts

Local governments can only do so much, as they have minimal control over the transportation and energy sector. The majority of our future emissions depend on state, federal, and regional efforts to affect the efficiency of vehicles, fuels, electricity, and natural gas. The waste sector remains the one sector in which local governments have a large influence, which is demonstrated by the estimated 19% reduction to be achieved by the local waste measures in this Climate Action Plan. This reduction is largely due to the City's commitment to work with the Western Placer Waste Management Authority (WPWMA) to accept more types of materials for recycling and composting. The City does not have similar authority in the energy sector to negotiate renewable power generation with utilities nor does it have authority in the transportation sector to see that vehicle manufacturers create lower-emission vehicles.



This section describes and analyzes the major state reduction strategies included in the AB 32 Scoping Plan and accounted for in the CAP adjustment to the business-as-usual General Plan Update forecast. To clarify, these are slated, programmed actions that the State is guaranteed to take. Furthermore, they are programs or projects that require no local involvement. Other state-led efforts that require significant local involvement, such as SB 375 and Title 24, are incorporated into the CAP measures as described herein and in **Appendix B**. Incorporating state measures into the local forecast and reduction assessment gives us a more accurate picture of future emissions growth and the responsibility for action.

AB 1493 (Pavley)

Assembly Bill 1493 (Pavley), signed into law in 2002, will require carmakers to reduce greenhouse gas emissions from new passenger cars and light trucks beginning in 2011. CARB adopted regulations in September 2004 that create two phases of increasingly stringent standards for car manufacturers between 2009 and 2020. It is expected that the Pavley regulations will reduce GHG emissions from California passenger vehicles by about 22% in 2012 and about 30% in 2016 when compared to business-as-usual emissions trends.²²

²² California Air Resources Board (CARB). Clean Car Standards. <http://www.arb.ca.gov/cc/ccms/ccms.htm> (accessed May 2010).

Low Carbon Fuel Standard

The State is proposing to reduce the carbon intensity of transportation fuels consumed in California. To reduce the carbon intensity of transportation fuels, CARB is developing a Low Carbon Fuel Standard (LCFS), which would reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 as called for by Governor Schwarzenegger in Executive Order S-01-07. LCFS will incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce greenhouse gas emissions.

Renewable Portfolio Standard (RPS)

Established in 2002 in SB 1078, the RPS program requires electricity providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and by 33% by 2020.

More information on the quantification of these actions is included in **Appendix B**.

IV. Next Steps

The previous chapters presented energy use, transportation, and waste reduction measures intended to reduce community emissions in Rocklin according to state targets. These measures represent the hard work and initiative of the City to go above and beyond normal practice by proactively addressing the City's relationship to global climate change.

This report lays a foundation that will be revised and built upon for years to come. Implementation remains the most difficult component of climate action because the field is always evolving with new technology, policy, and resources. However, having calculated the best-known costs and benefits to each reduction measure, we can identify several attainable goals that bear low initial costs and large reductions in emissions.

The City will coordinate implementation of the reduction measures and the operation of the programs that result from implementation. Individual department leads may also be warranted to ensure efficient cross-coordination in implementing these measures. **Table 5** includes a recommended timeline for activation of the each reduction measure, as well as a schedule for re-evaluation and ramp-up of the measure. The table also identifies the responsible department and supporting or partnering agencies that are necessary to see the measure through.

Table 5 – Climate Action Plan Implementation Table

Goal or Measure		Required Action			Responsibility	Supporting or Partnering Agencies
		Phase 1 2008– 2015	Phase 2 2015– 2020	Phase 3 2020– 2030		
Goal 1: Energy Efficiency and Conservation						
1	Energy-Efficient Streetlights	X			Public Works	PG&E
2	Municipal Energy Audit and Retrofit	X	X	X	General Services	CEC, PG&E
3	Energy Conservation Ordinance		X		Planning	PG&E Build It Green
4	Public Outreach	X			Planning, Community Development	PG&E
Goal 2: Renewable Energy						
5	Municipal Solar Energy		X		General Services	PG&E, CPUC
6	Community Renewable Energy		X		Planning	PG&E, CPUC
7	Renewable Energy in Recreation/Conservation Areas		X		Planning, Parks and Recreation	PG&E, CPUC

Goal or Measure		Required Action			Responsibility	Supporting or Partnering Agencies
		Phase 1 2008– 2015	Phase 2 2015– 2020	Phase 3 2020– 2030		
Goal 3: Green Building and Design						
8	Green Building Ordinance		X		Building, Planning	Build it Green (BIG), U.S. Green Building Council
9	Cool Paving Materials		X		Planning, Public Works	
10	Increased Tree Cover	X			Planning, Public Works	
Goal 4: Downtown Rocklin						
11	Mixed-Use Higher-Density Development	X	X	X	Planning	
12	Transit-Oriented Development	X	X	X	Planning	Placer County Transit, Placer County Transportation Planning Agency (PCTPA)
13	Pedestrian Orientation	X	X	X	Planning	
Goal 5: Citywide Land Use						
14	Mixed Use, Higher Density and Infill Development	X	X	X	Planning	
15	Jobs/Housing Balance		X		Planning, Community Development	
16	Affordable Housing	X			Planning, Community Development	
Goal 6: Alternative Transportation Modes						
17	Non-Residential Bike Parking		X		Planning	
18	Multi-Family Residential Bike Parking		X		Planning	
19	Bicycle Routes		X		Planning	SACOG Placer County
20	Pedestrian Connections		X		Planning	
21	Parking Lot Design		X		Planning	
22	Increased Transit Service		X		Planning	Placer County Transit, SACOG, PCTPA

NEXT STEPS

City of Rocklin Climate Action Plan

Goal or Measure	Required Action			Responsibility	Supporting or Partnering Agencies
	Phase 1 2008– 2015	Phase 2 2015– 2020	Phase 3 2020– 2030		
23 Walking School Bus Program	X			Planning	RUSD
Goal 7: Vehicle Efficiency and Alternative Fuels					
24 Vehicle Idling Limitations		X		Public Works, Planning, Police	Caltrans, PCAPCD
25 Neighborhood Electric Vehicle (NEV) Links	X			Planning	City of Lincoln, PCTPA
26 Prioritized Parking	X			Planning	PCAPCD
27 Electric Vehicle Recharging		X		Planning, Building	
Goal 8: Waste Reduction					
28 Indirect Waste Diversion	X			Planning, City Council	Western Placer Waste Management Authority (WPWMA)
29 Direct Waste Diversion	X			Planning, Public Works	Western Placer Waste Management Authority (WPWMA)

It is suggested that the City update the 2008 Community Greenhouse Gas Emissions Baseline Inventory at the beginning of each new implementation phase to see how emissions have changed since the 2008 baseline year. Use of these updated reports will be two-pronged, first reporting emissions using present quantification methodology and protocol (see **Appendix A**) in order to create a basis of comparison. Secondly, the updated report will analyze emissions using an up-to-date methodology and protocol that will likely capture other sources of emissions that we are currently unable to calculate with today's research methodologies and analysis tools. As a result of these updated inventories, this Climate Action Plan and corresponding reduction measures will be revisited. Attention will then be shifted to those sectors displaying faster growth rates than others and to the emission reduction measures that are having greater success at reducing emissions with less cost than other measures.

Timely implementation, along with the initiative of each resident, employee, and business of Rocklin, will put the City well on its way to reducing impacts on the earth and the community while also preparing for the challenges that lie ahead as a result of the inevitable transformations associated with climate change.

Appendix A:
City of Rocklin 2008 Community-
Wide Baseline Greenhouse Gas
Emissions Inventory

City of Rocklin 2008 Community-Wide Baseline Greenhouse Gas Emissions Inventory

July 2010

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1. Executive Summary

Climate change is quickly becoming a high priority among policy makers and residents alike. Through the stimulus-funded Energy Efficiency and Conservation Block Grant (EECBG) program, the City of Rocklin has chosen to address its contribution to climate change through the development of a baseline Community-Wide Greenhouse Gas (GHG) Emissions Inventory ("Inventory"). This Inventory identifies the major sources of greenhouse gas emissions within the city¹ and provides a baseline against which future progress can be measured. The Inventory will be used to inform the City's Climate Action Plan developed in conjunction with the City's General Plan Update and associated Environmental Impact Report (EIR).

It is important to note that while emissions from municipal operations were not separately analyzed, they are included as a subset of the community inventory in the commercial/industrial, transportation, and waste categories of the community-wide inventory. The municipal operations inventory, when completed, should not be added to the community analysis; rather it should be looked at as a slice of the complete picture.

To summarize, this Inventory does the following:

- ◆ Calculates GHGs from community-wide² activities, including municipal operations, within the City's jurisdictional boundary in calendar year 2008;
- ◆ Identifies the major sources of greenhouse gas emissions from community-wide sources;
- ◆ Provides City decision-makers and the community with adequate information to inform policy decisions; and
- ◆ Forecasts how emissions will grow in the community if no behavioral changes are made.

The 2008 community-wide baseline GHG Inventory represents a key step in the City of Rocklin's effort to improve air quality, enhance environmental sustainability, and ensure the safety and comfort of its residents for generations to come. In addition, this Inventory allows the City to quantitatively track and take credit for its numerous efforts related to energy efficiency and the mitigation of global climate change.

What are Greenhouse Gas Emissions (GHGs)?

Gases that trap heat in the Earth's atmosphere are called greenhouse gases, or GHGs. Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. While many of these gases occur naturally in the atmosphere, modern human activity has led to a steep increase in the amount of GHGs released into the atmosphere over the last 100 years. Collectively, these gases intensify the natural greenhouse effect, thus causing global average surface temperatures to rise, which in turn affects global climate patterns. GHGs are often quantified in terms of CO₂ equivalent, or CO₂e, a unit of measurement that equalizes the potency of GHGs.

Source: Intergovernmental Panel on Climate Change (IPCC), 2007

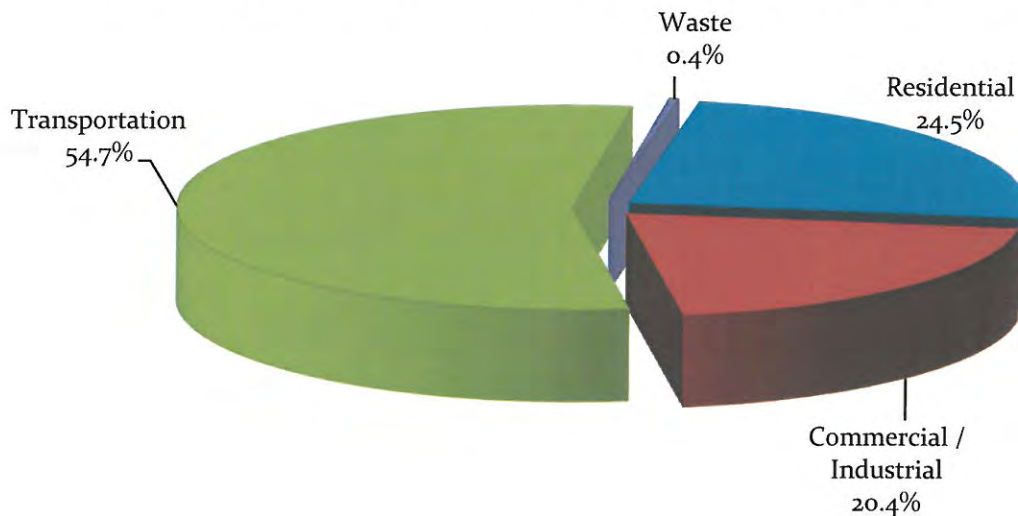
¹ In this report, the term "city" refers to the area inside the jurisdictional boundary of the City of Rocklin, whereas "City" or "municipal" refers to those activities which are under the operational control of City agencies.

² "Community-wide" or "community" refers to all activities within the city (as defined above), including those from businesses, industrial processes, residents, vehicles, and municipal operations.

1.1 Community-Wide GHG Inventory Results

The GHG Inventory identifies that the community of Rocklin emitted approximately 428,001 metric tons of CO₂e in the baseline year 2008. As shown in **Figure 1**, the transportation sector was the largest contributor to emissions (54.7%), producing approximately 234,207 metric tons of CO₂e in 2008. Emissions from the residential, commercial, and industrial sectors accounted for a combined 44.9% of the total. Largely due to Rocklin's single stream waste service, the waste sector contributed only 0.4% of emissions.

Figure 1 – Community-Wide Greenhouse Gas Emissions by Sector, 2008



The majority of emissions from the transportation sector were the result of gasoline consumption in private vehicles traveling on local roads and Interstate 80 (I-80) and State Route 65 (SR 65). GHG figures from the waste sector are the estimated future emissions that will result from the decomposition of waste generated by city residents and businesses in the base year 2008.

1.1.1 Data Limitations

This community-wide Inventory captures the major sources of greenhouse gases caused by activities within the city per standard practice. However, it is important to note that some likely emission sources were not included in the Inventory because of privacy laws, lack of data, or a lack of reasonable methodology for calculating emissions. It is estimated that these sources not included in the inventory comprise less than 10% of total emissions in the city. It is likely that as greenhouse gas inventories become more common, methodology and accessibility to data will improve.

While an official protocol for community-wide emissions is not yet available from the State, this inventory is consistent with current best practices for greenhouse gas inventories. Inventories are commonly restricted to energy, transportation, and waste analysis due to lack of methodology or lack of reliable data to quantify other sources of emissions. This results in the exclusion of the following emission sources:

- ◆ Construction-related emissions
- ◆ Off-road vehicle emissions
- ◆ Propane emissions
- ◆ Refrigerant emissions
- ◆ Aircraft emissions
- ◆ Sewage treatment emissions

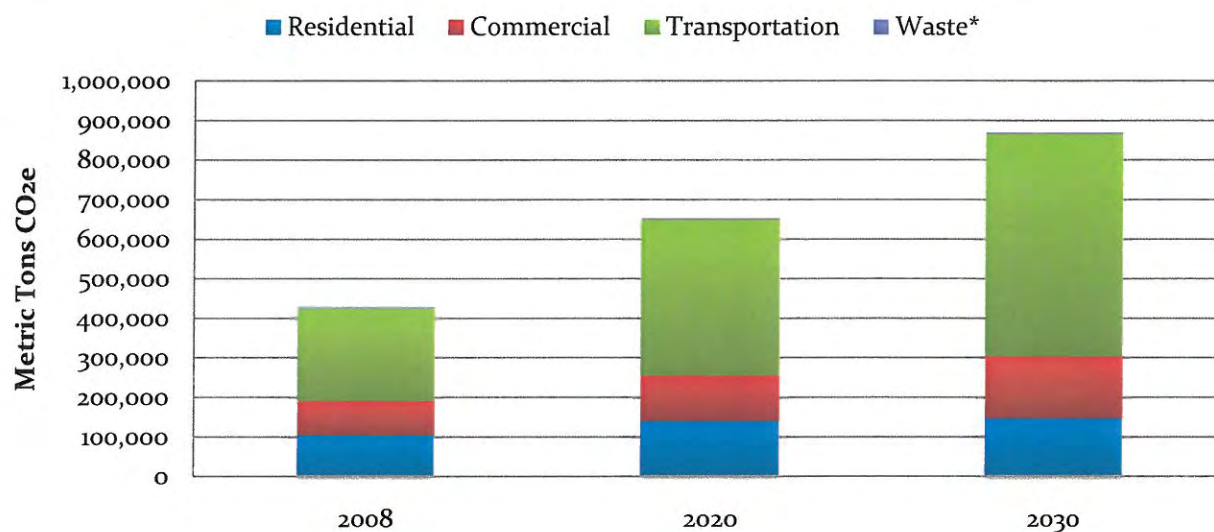
As inventory protocol and methodology advances, these sources can be incorporated into the baseline inventory. The current emissions sources are believed to comprise the vast majority of community-wide emissions.

With regard to refrigerant emissions, as a part of its AB 32 Scoping Plan, CARB developed specifications for commercial refrigeration systems to reduce high global warming potential direct and indirect greenhouse gas emissions. Direct refrigerant emissions occur from system leaks, ruptures, installations, maintenance, and end of life, while indirect emissions occur during equipment operation as a result of energy use. To further its efforts, CARB has now partnered with the California Energy Commission (CEC) to help develop new standards for commercial refrigeration systems that will be incorporated into the CEC's Title 24 Building Energy Efficiency Standards revisions for 2011. The new standards are anticipated to be adopted in June of 2011, to be implemented on January 1, 2013. Because new standards for commercial refrigeration systems are anticipated to become part of the Title 24 standards in the near future, this Climate Action Plan does not include any direct reduction efforts aimed at commercial refrigeration systems. However, should the Title 24 update process not proceed as anticipated and/or should the responsibility for regulating commercial refrigeration systems emissions be directed toward local governments, the City of Rocklin will consider addressing projects with commercial refrigeration systems with mitigation requirements to utilize low global warming potential (GWP) refrigerants or emission reduction efforts, as has been done previously by the City.

1.1.2 Forecast and Next Steps

If consumption trends continue the pattern observed in 2008, emissions will reach 651,599 metric tons of CO₂e by 2020 and 869,178 by 2030. This growth, shown in **Figure 2**, is due to projected increases in transportation, households, and jobs within the city.

Figure 2 – Business-as-Usual Greenhouse Gas Emissions Forecast

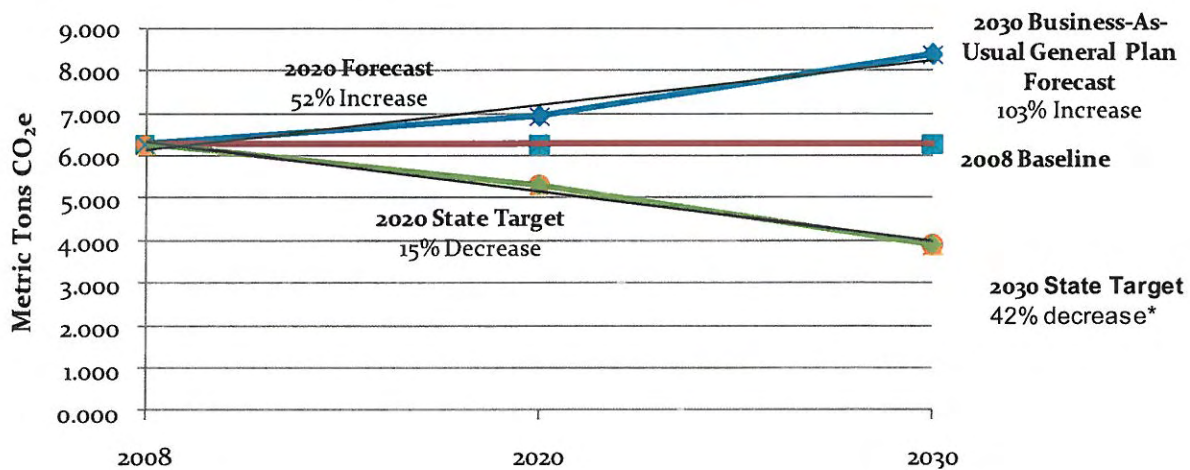


* Please note that waste emissions are less than 1% of total emissions and are therefore not visible at the scale of this figure.

With this information, the City can make an informed determination of a reduction target. Presenting greenhouse gas emissions reductions as a per service population metric most accurately depicts the City's forecast emissions and reduction potential. Linking emissions to service population establishes a balanced point of comparison with other jurisdictions. This approach is similar to the metric approach that the California Air Resources Board will use for implementation of Senate Bill 375 (Steinberg, Chapter 728, Statutes of 2008).³ A per service population metric is simple, easily understood by the public, and consistent with metrics currently in use by many Metropolitan Planning Organizations, including the Sacramento Area Council of Governments (SACOG). Conformance with the State of California's recommended reduction of 15% below present levels by 2020 would equal achieving emissions of 5.324 metric tons of carbon dioxide equivalent per service population.

³ Regional Targets Advisory Committee. September, 29, 2009. Recommendations of the Regional Targets Advisory Committee (RTAC) Pursuant to Senate Bill 376. <http://www.arb.ca.gov/cc/sb375/rtac/report/092909/finalreport.pdf>

Figure 3 – Rocklin Business-as-Usual Greenhouse Gas Emissions Forecast and State Reduction Targets



*2030 target is an interpolation of the Executive Order S-3-05 2050 target, which establishes a target of 80% below 1990 levels by 2050.

2. Community-Wide Inventory Methodology

2.1. Baseline and Forecast Years

The City of Rocklin chose the baseline year of 2008 as the earliest year with strong data and for consistency with the General Plan. The State of California uses 1990 as a reference year to remain consistent with the Kyoto Protocol and because it has well-kept records of transportation trends and energy consumption in that year. However, cities and counties throughout California typically elect to use 2005 or 2006 as a baseline year because of the more reliable recordkeeping from those years and because of the large amount of growth that has occurred since 1990.

This Inventory uses a forecast year of 2020 to be consistent with the State of California GHG Inventory⁴ forecast year and AB 32 target, both of which reference 2020. In addition, it is likely that any forecast beyond 2020 would have a significant margin of error because of unknown population growth rates and new technology.

2.2. Data Collection and Methodology

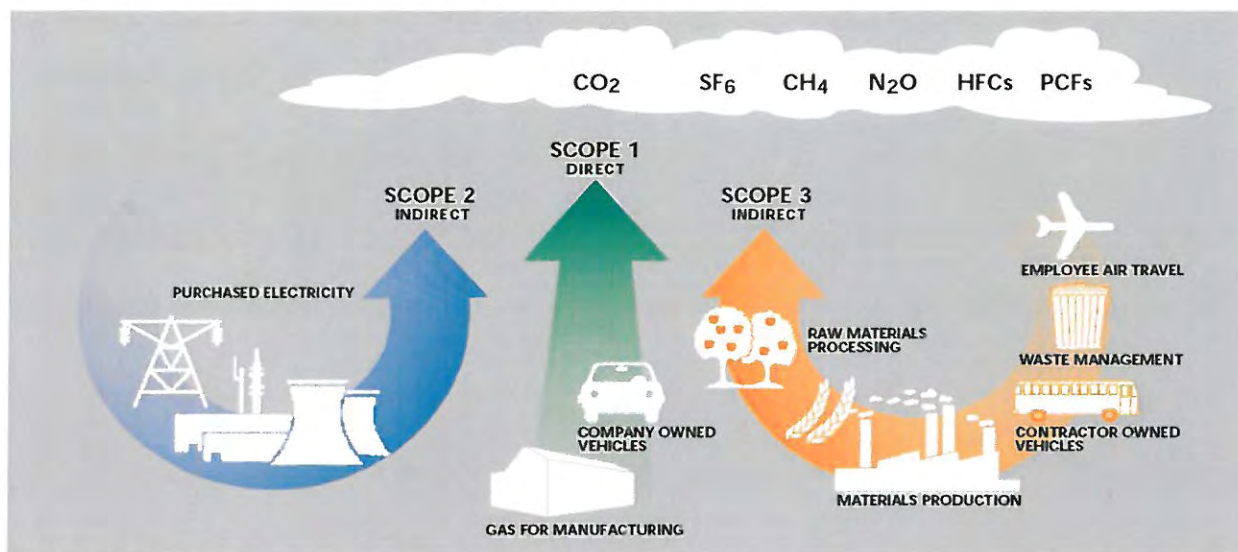
Creating the community emissions inventory required the collection of information from a variety of sources. Sources for community data included the Pacific Gas and Electric Company (PG&E), California Air Resources Board, and CalRecycle (formerly the California Integrated Waste Management Board). Data from the year 2008 was used in the inventory, with one exception: A subset of waste data by type was not available for 2008; therefore, this study utilizes a California statewide waste characterization study conducted in 2003–2004.

For community activities, emissions sources are categorized by scope. Scopes help us identify where emissions originate and what entity retains regulatory control and the ability to implement efficiency measures. The scopes are illustrated in **Figure 4** and defined as follows:

- ◆ **Scope 1.** Direct emissions sources located within Rocklin, mostly from the combustion of fuels. Examples of Scope 1 sources include use of fuels such as gasoline and natural gas.
- ◆ **Scope 2.** Indirect emissions that result because of activities within the jurisdictional boundary of the city, limited to electricity, district heating, steam and cooling consumption. Examples of Scope 2 sources include purchased electricity used within the city and associated with the generation of greenhouse gases at the power plant. These emissions should be included in the community-scale analysis, as they are the result of the community's electricity consumption.
- ◆ **Scope 3.** All other indirect emissions that occur as a result of activity within the unincorporated areas. Examples of Scope 3 emissions include methane emissions from solid waste generated within the community which decomposes at landfills either inside or outside the city.

⁴ California Greenhouse Gas Inventory, <http://www.arb.ca.gov/cc/inventory/inventory.htm>

Figure 4 – Greenhouse Gas Emission Scopes



Source: NZBCSD (2002), *The Challenge of GHG Emissions: the “why” and “how” of accounting and reporting for GHG emissions: An Industry Guide*, New Zealand Business Council for Sustainable Development, Auckland

2.3. Data Sources

The data used to complete this Inventory came from multiple sources, as summarized in **Table 1**. Utility providers supplied electricity and natural gas consumption data associated with commercial, industrial, and residential buildings in 2008. Vehicle miles traveled (VMT) data was obtained from the General Plan Update Environmental Impact Report (EIR) Transportation Assessment. These data sources are further explained in the sector-specific discussions of this document.

Table 1 – Inventory Data Sources

Sector	Information	Unit of Measurement	Data Source
Residential	Electricity Consumption	Therms	PG&E
	Natural Gas Consumption	kWh	PG&E
Commercial/ Industrial	Electricity Consumption	Therms	PG&E
	Natural Gas Consumption	kWh	PG&E
Transportation	VMT from trips originating or terminating within the city	Annual average VMT	General Plan EIR Transportation & Circulation Chapter
Solid Waste	Solid waste tonnage sent to landfill from activities in the city	Short tons	CalRecycle

2.4. Data Limitations

It is important to note that calculating community-wide greenhouse gas emissions with precision is a complicated task. It relies on numerous assumptions and is limited by the quantity and quality of available data. Because of these limitations, it is useful to think of any specific number generated by the model as an approximation of reality, rather than an exact value.

Despite these limitations, this inventory is the best-available snapshot of the city's greenhouse gas emissions. If methodology improves in the coming years, this baseline can be adjusted to reflect these changes. The following paragraphs highlight emissions that cannot be included in a GHG inventory under current science and policy direction, or because of lack of reliable data.

This Inventory does not separately analyze site-level emissions from specific sources such as refineries, landfills, and large industrial emitters. The emissions from industrial energy consumption and related transportation are included under the commercial/industrial category, but will not be analyzed independently as part of this Inventory. This is for two reasons: (1) state privacy laws prevent us from obtaining site-level energy consumption data from utility providers, and (2) it is the responsibility of the emitter, whether it is a large refinery or household, to perform their own energy audit and subsequent reduction process. Efforts to require site-level energy audits and greenhouse gas emissions reporting are being continually expanded and required by the California Climate Action Registry, U.S. Environmental Protection Agency, and California Air Resources Board.

The city's actual 2008 greenhouse gas emissions are likely to be slightly greater than what are reported in this document due to three main factors: (1) data limitations, (2) privacy laws, and (3) a lack of a reasonable methodology to collect or model emissions data from some emission sources.

What's the difference between an emissions inventory and a carbon footprint?

An emissions inventory incorporates emissions directly caused by actions taken within the city that we know how to calculate. A carbon footprint, on the other hand, encompasses greenhouse gas emissions from the entire life cycle of a product or service. This could include the emissions from raising beef for sale at the supermarket or the fuel consumption associated with residents' flights in and out of Sacramento Airport. At this time, it is difficult to accurately estimate the community's carbon footprint. However, individuals may reduce their carbon footprint by buying locally produced foods and goods, reducing packaging, and other behavioral changes.

Lack of available data prevented the calculation of emissions from community-wide freight and passenger trains, ports, off-road vehicles and equipment, propane use, and City government operations refrigerants. For rail, port, and other off-road vehicles and equipment emissions, the California Air Resources Board OFFROAD 2007 software provides emissions from rail activities; however, these numbers are aggregated for the entire Placer County area, including incorporated, unincorporated, and state or federally owned land. Without data specific to Rocklin and without a reasonable methodology for allocating the OFFROAD calculation, rail activity emissions were omitted. Lack of data availability also prevents the calculation of emissions from propane (liquefied petroleum gas, or LPG) created in

the city. Propane is basically an unregulated fuel in California (except for storage and safety issues, which are regulated). Because it is an unregulated commodity, no data is collected by the state on propane sales or usage.

Lack of data availability also prevents the calculation of emissions from wastewater (sewage) created in the city. Municipalities, special services districts, and private landowners that collect, treat, and dispose of wastewater differ with regard to treatment and disposal methods, water efficiency requirements, impervious surface allowances, landscape irrigation efficiency standards, type of building stock, and data collection and reporting. As a result, it is unclear what portion of the sewage treated at each facility originates from city businesses and residents. For this reason, estimates associated with the city's share of sewage cannot be made at this time. Full accounting of emissions from wastewater collection, treatment, and disposal would require extensive coordination with special services districts, such as community services districts and sanitary districts, other municipalities, and private landowners.

Similarly, protocol and methodological barriers prevent us from including all emissions from the treatment and movement of water consumed by the community. Water in the city is provided by the Placer County Water Agency. The emissions from treatment facilities are the responsibility of the jurisdiction in which these facilities are located. As such, this Inventory only includes emissions from the electricity and natural gas consumed by water treatment facilities within the city's jurisdictional boundary. Lastly, there is a lack of reasonable methodology for estimating life-cycle emissions for the community. Life-cycle emissions are emissions associated with the production and disposal of items consumed by a community. For instance, a life-cycle assessment would estimate the emissions associated with the planning, production, delivery, and disposal of each car currently in the city. In contrast, this analysis only captures how much that car drives within the city.

Given these limitations, it is likely that the city's emissions are greater than presented in this Inventory. However, it is important to note that the emissions identified in this report are primarily greenhouse gases that the community has directly caused and has the ability to reduce through implementation of the City's Climate Action Plan.

2.5 Methodology

The CAP will include a baseline inventory (Inventory) of GHG emissions resulting from activities within the geopolitical boundary of Rocklin in calendar year 2008. The Inventory will act as a baseline against which the City can measure future changes in GHG emissions and the effectiveness of reduction measures. As there is no protocol for community-wide GHG calculations at this time, the Inventory is based on a series of best practices and the California Air Resources Board Local Government Operations Protocol. The Inventory does not use ICLEI (Local Governments for Sustainability) Clean Air and Climate Protection (CACP) software.

GHG calculations include all six internationally recognized greenhouse gases regulated under the Kyoto Protocol: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). CO₂, C₂O, and CH₄ emissions constitute the

majority of local government emissions. These GHGs are calculated using verified emissions coefficients and sources as outlined below. HFCs, PFCs, and SF₆ result from transportation refrigerants, industrial operations, and electricity generation. These emissions are discussed qualitatively in the City's CAP for several reasons, including (1) a reliable source of activity data for these emissions does not exist or is unavailable due to privacy regulations; (2) these emissions constitute a small part of overall emissions; and (3) the majority of these GHGs are released by major manufacturers and power generators, all of which are regulated directly by the State.

GHGs are presented in metric tons (tonnes) of carbon dioxide equivalent (CO₂e) per standard practice. Carbon dioxide equivalent accounts for the different potency, or global warming potential (GWP), of each greenhouse gas in order for all six GHGs to be compared on an equal basis.

The Inventory is based on historical activity data including vehicle miles traveled (VMT), energy consumption, and waste sent to landfills. Verified emission coefficients are applied to convert this activity data into carbon dioxide, methane, and nitrous oxide emissions. These subtotals are finally converted into total tonnes of CO₂e using internationally recognized GWP factors developed by the Intergovernmental Panel on Climate Change (IPCC).

The sources of activity data and emission coefficients included in the Inventory are summarized in **Table 2**.

Table 2 – Emission Coefficient Sources

Sector	Activity Data Source	Emission Coefficient Source
Energy	2008 PG&E residential and commercial/industrial electricity consumption	Verified CO ₂ emission coefficient reported by PG&E < http://www.pge.com/about/environment/calculator/assumptions.shtml >
	2008 PG&E residential and commercial/industrial natural gas consumption	Verified CO ₂ , N ₂ O, and CH ₄ emission coefficients from the California Air Resources Board (CARB) Local Government Operations Protocol v1.0 (Sept 2008)
Transportation	General Plan EIR traffic impact analysis	California Air Resources Board EMFAC 2007
Waste	2008 Municipal Solid Waste (MSW) and Alternative Daily Cover (ADC) tonnage by the California Integrated Waste Management Board (CIWMB) Waste Flow by Jurisdiction; Waste characterization by the CalRecycle 2004 Waste Characterization Report ⁵	U.S. Environmental Protection Agency Waste Reduction Model (WARM)

⁵ The CalRecycle 2004 Waste Characterization Report is the most recent study determining average waste composition in California (paper, organics, metals, C&D, etc.). It is the standard for determining waste types for local government inventories in California.

3. Community-Wide Inventory Results

The City of Rocklin is located in south Placer County in northern California. The city is 21 miles northeast of the city of Sacramento and 14 miles west of Auburn, in the western foothills of the Sierra Nevada range. Rocklin is bordered by the city of Lincoln to the north, city of Roseville to the south and west, unincorporated Placer County and State Route (SR) 65 to the west, and the town of Loomis to the east. The City of Rocklin is located in the rolling foothills of the Sierra Nevada range. Elevations in the city range from 150 to 525 feet above sea level. The community consists of urban areas, grasslands used for limited grazing, and riparian habitat areas, partially covered with native oaks and grasslands. Antelope Creek, Secret Ravine Creek, Pleasant Grove Creek, Clover Valley Creek, and Sucker Ravine Creek are perennial streams that provide riparian habitat for a variety of animals.

The area is served by two major highways, Interstate 80 (I-80) and State Route 65 (SR 65). I-80 provides access from Rocklin to Sacramento and the Bay Area to the west, and to the cities of Auburn and Reno to the east. SR 65 provides a connection to the cities of Lincoln and Marysville/Yuba City and SR 70 to the north and to the junction of I-80 to the south. Sierra College Boulevard connects to SR 193, which provides a link between the city of Lincoln and the community of Newcastle.

3.1 Community-Wide Emissions by Scope

Although there are countless items that can be included in a community-scale emissions inventory, as discussed in Chapter 2, this Inventory includes Scope 1, Scope 2, and Scope 3 sources from the following sectors, consistent with ICLEI protocol:

- ◆ Residential
- ◆ Commercial/Industrial
- ◆ Transportation
- ◆ Waste

Scopes

The key principles to remember are that Scope 1 emissions are caused by activities within the city and emitted within the city (fuel combustion), while Scope 2 emissions are caused by activities within the city, but most likely are emitted outside of the city (electricity). Scope 3 emissions are indirect emissions, such as methane released from cattle, sheep, and waste decomposition.

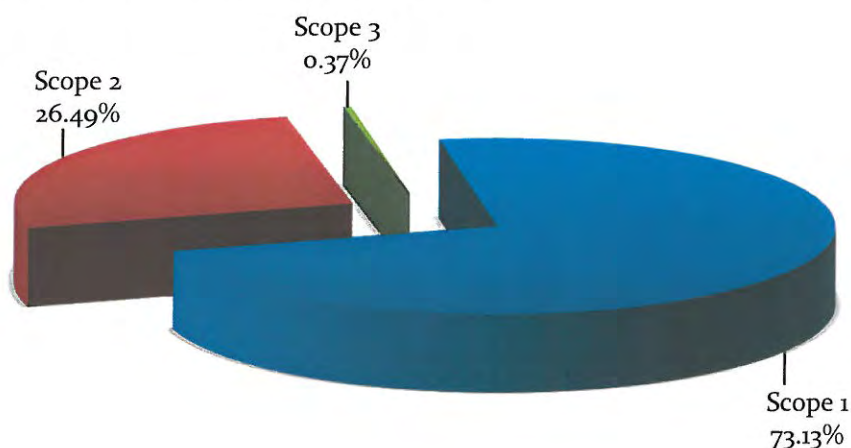
Table 3 summarizes the scopes of each sector in this analysis.

Table 3 – Baseline Greenhouse Gas Emissions by Scope

Sector	Scope 1 Emissions (MTCO ₂ e)	Scope 2 Emissions (MTCO ₂ e)	Scope 3 Emissions (MTCO ₂ e)	Total Emissions (MTCO ₂ e)
Residential	48,610	56,214	0	104,824
Commercial/Industrial	30,189	57,176	0	87,364
Transportation	234,207	0	0	234,207
Waste	0	0	1,605	1,605
Total	313,006	113,390	1,605	428,001
Percentage of Total	73.13%	26.49%	0.37%	100.0%

Including all sectors and scopes, the community emitted approximately 428,001 metric tons of CO₂e in 2008. As shown in **Figure 5**, the majority of community GHG emissions were Scope 1 (73.1%), with Scope 2 (26.49%) and Scope 3 (0.4%) constituting the remainder.

Figure 5 – Rocklin Baseline Emissions by Scope



The largest portion of Scope 1 emissions came from the transportation sector. These emissions qualify as Scope 1 because they involve the direct combustion of fuel within the jurisdictional boundary of the city. The second largest source of Scope 1 emissions was commercial and industrial natural gas use.

Commercial and industrial energy use generated the largest percentage of Scope 2 emissions; however, the difference between this sector and the residential sector is minimal.

INVENTORY RESULTS

City of Rocklin
Greenhouse Gas Emissions Inventory

3.2 All-Scope Emissions by Sector

As noted above, the community emitted approximately 428,001 metric tons of CO₂e in calendar year 2008. In addition to analyzing the data by scope, it can also be aggregated by sector. As depicted in **Figure 6** and **Table 4** below, the transportation sector was the largest emitter (54.7%) in 2008. Emissions from residential energy use produced 24.5% of emissions, while commercial and industrial energy use accounted for a combined 20.4%. The remaining 0.4% is attributed to emissions from waste.

Figure 6 – Rocklin Baseline Greenhouse Gas Emissions by Sector

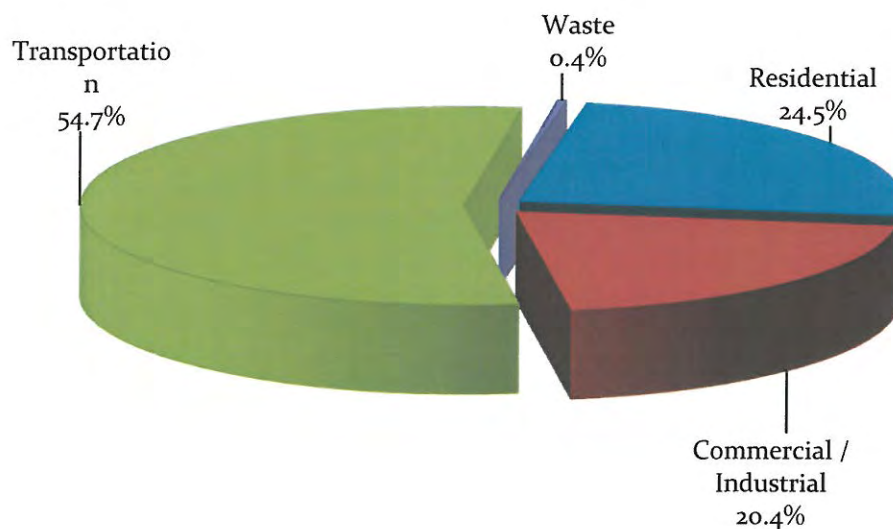


Table 4 – Rocklin Baseline Greenhouse Gas Emissions by Sector

2008 Baseline Greenhouse Gas Emissions	Metric Tons CO ₂ e	Percentage of Total
Residential	104,824	24.5%
Commercial/Industrial	87,364	20.4%
Transportation	234,207	54.7%
Waste	1,605	0.4%
Total	428,001	100.0%

3.3 Transportation

As with the majority of California municipalities,⁶ travel by on-road motorized vehicle constitutes the greatest percentage of greenhouse gas emissions in the city (54.7%). The Inventory does not include trains, boats, or off-road recreational vehicles, as there is no feasible methodology for calculating emissions from these sources.

These emissions result from the gasoline and diesel consumption of vehicle trips originating or terminating within the city. The 2008 General Plan Update Environmental Impact Report (EIR) provides the number of vehicle miles traveled (VMT) within Rocklin, as shown in **Table 5**. VMT was distributed by vehicle class and fuel according to Placer County averages included in the California Air Resources Board (CARB) EMFAC 2007 software.

Emissions that resulted from the air, rail, and boat travel of city residents were not included in the transportation sector analysis. As science and data collection methodology develop, it is likely that the greenhouse gas emissions from air, rail, and boat travel could be estimated as Scope 3 items.

Table 5 – Transportation Input and Output Data

Sector	Emissions Source	Input Data	Emissions Output (MTCO _{2e} /year)
Transportation	Vehicle Miles Traveled (VMT)	1,092,000 Daily VMT	234,207

3.4 The Built Environment (Residential, Commercial, Industrial)

With all scopes aggregated, 44.9% of total community-wide emissions in the year 2008 came from the “built environment.” The built environment comprises residential, commercial, and industrial natural gas and electricity consumption. This analysis does not include emissions from other types of energy such as propane, solar, and wind due to lack of reliable sales, construction, or consumption data. The commercial and industrial sectors are combined in this Inventory due to a mandatory aggregating of commercial and industrial data by PG&E.⁷

⁶ For a list of California cities and counties that have developed GHG inventories, see the California Office of Planning and Research document here: http://www.opr.ca.gov/ceqa/pdfs/City_and_County_Plans_Addressing_Climate_Change.pdf

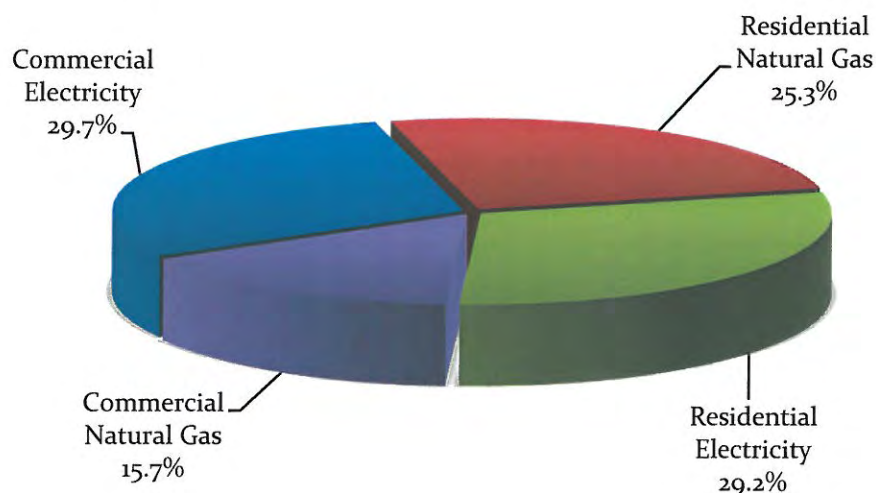
⁷ Commercial and Industrial Electricity and Natural Gas were combined into one section due to the California 15/15 rule. The 15/15 rule was adopted by the California Public Utilities Commission in the Direct Access Proceeding (CPUC Decision 97-10-031) to protect customer confidentiality. Corie Cheeseman, Program Manager with Pacific Gas and Electric Company - Customer Energy Efficiency, provided this information.

Table 6 – Energy Emissions by Sector and Source

Sector	Emissions Source	Input Data	Emissions Output (MTCO _{2e} /year)	% of Total Energy Emissions	% of Total Energy Emissions by Sector
Residential	Electricity	193,637,604 kWh/Year	56,214	29.2%	53.6%
	Natural Gas	9,159,404 Therms/Year	48,610	25.3%	
Commercial	Electricity	196,948,269 kWh/Year	57,176	29.7%	46.4%
	Natural Gas	5,688,385 Therms/Year	30,189	15.7%	
Total			192,189	100.0%	100.0%

In 2008, emissions from the built environment were split almost evenly between the commercial/industrial sector and the residential sector (see **Table 6**). All of the emissions calculated from the built environment were the result of local natural gas consumption (Scope 1) and local consumption of electricity generated outside of the city (Scope 2). Overall, natural gas consumption caused the majority of emissions from the built environment in 2008, as shown in **Figure 7**.

Figure 7 – Commercial and Residential Energy Emissions



It is useful to consider the causes behind significant variations in data when developing policies and programs to reduce emissions from each sector. For example, the policies that would aim to reduce emissions from the commercial/industrial sector may differ from those aiming to reduce emissions from

the residential sector based on the information above (and in the figures and tables below). In this regard, the emissions inventory provides valuable insight into policy development strategies.

3.4 Waste

Solid waste disposed of at managed landfills was responsible for 0.4% of total emissions for the community. The EPA's Waste Reduction (WARM) software calculates methane generation from waste sent to landfill in 2008 and accounts for the confirmed methane recovery factors.

Waste emissions are considered Scope 3 emissions because they are not generated in the base year, but will result from the decomposition of waste generated in 2008 over the full 100-year-plus cycle of its decomposition. In 2008, the community sent approximately 33,750 tons of waste to landfills. The 2004 California Statewide Waste Characterization Study provides standard waste composition for the State of California.⁸ Identifying the different types of waste in the general mix is necessary, because decomposition of some materials generates methane within the anaerobic environment of landfills whereas others do not. Carbonaceous materials such as paper and wood actually sequester the methane released in managed landfills, thereby offsetting some or all of the emissions from food and plant waste.

Table 7 shows the estimated percentage of emissions coming from the various types of organic, methanogenic waste.

Table 7 – Waste Emissions by Type

Emissions Source	Input Data (Tons Landfilled*)	Emissions Output (MTCO ₂ e/ year)	% of Total Waste Emissions
Aluminum Cans	67.5	0.7	0.04%
Steel Cans	270.0	2.8	0.18%
Glass	776.3	8.1	0.51%
HDPE	168.8	1.8	0.11%
PET	168.8	1.8	0.11%
Corrugated Cardboard	1,923.8	174.4	10.87%
Magazines/third-class mail	270.0	-24.2	-1.51%
Newspaper	742.5	-180.6	-11.26%
Office Paper	675.0	324.8	20.24%
Phonebooks	67.5	-16.4	-1.02%
Dimensional Lumber	3,240.0	-461.7	-28.77%
Food Scraps	4,927.5	913.8	56.94%

⁸ <http://www.ciwm.ca.gov/Publications/default.asp?pubid=1097>

Emissions Source	Input Data (Tons Landfilled*)	Emissions Output (MTCO ₂ e/ year)	% of Total Waste Emissions
Yard Trimmings	776.3	-72.9	-4.55%
Grass	1,417.5	58.3	3.63%
Branches	101.3	-14.4	-0.90%
Mixed Paper, Broad	3,442.5	255.5	15.92%
Mixed Metals	2,261.3	23.7	1.48%
Mixed Plastics	2,868.8	30.0	1.87%
Mixed Organics	2,328.8	95.4	5.94%
Mixed MSW	4,556.3	455.8	28.40%
Carpet	708.8	7.4	0.46%
Personal Computers	405.0	4.2	0.26%
Concrete	1,451.3	15.2	0.95%
Fly Ash	33.8	0.4	0.02%
Tires	101.3	1.1	0.07%
Total	33,750.0	1,604.9	100.0%

3.5 Per Capita Emissions

Per capita emissions can be a useful metric for measuring progress in reducing greenhouse gases and for comparing one community's emissions with neighboring cities and against regional and national averages. Currently, it is difficult to make meaningful comparisons between local inventories because of variations in the scope of inventories conducted. Only when ICLEI, the California Air Resources Board, and other organizations adopt universal reporting standards will local inventories be prepared in a consistent manner and therefore be comparable.

Simply dividing total community greenhouse gas emissions by population in 2008 (53,843) yields a result of 7.95 metric tons CO₂e per capita.⁹ It is important to understand that this number is not the same as the carbon footprint of the average individual living in Rocklin. It is also important to note that the per capita emissions number for the city is not directly comparable to every per capita number produced by other emissions studies because of differences in emission inventory methods.

⁹ California Department of Finance. 2008. E-5 Report City/County Population and Housing Estimates.

4. 2020 and 2030 Emissions Forecast

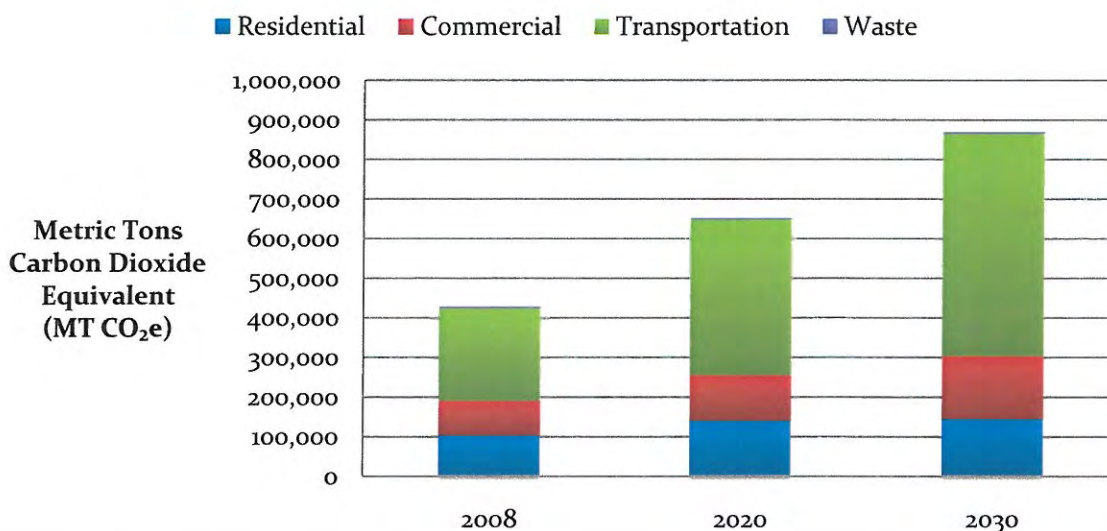
In order to assess the effectiveness of various reduction strategies, we must predict where emissions levels will be at the time of strategy implementation. To do this, we create what are called forecast years, or years when we take a snapshot of where annual emissions levels could be under various scenarios. Forecasting is completed by adjusting baseline levels of emissions consistent with household, population, commercial square footage, and transportation growth.

The basis for all growth scenarios is a business-as-usual projection. A business-as-usual projection predicts how greenhouse gas emissions will increase if behaviors and efficiencies do not change from 2008 levels, yet population, households, and vehicle miles traveled in Rocklin continue to increase. The business-as-usual analysis for Rocklin used analysis and assumptions included in the General Plan Update and General Plan Update EIR for the 2030 buildout scenario.

Consistent with state law, buildout is a worst-case scenario, or the maximum amount of development and population growth that the city could expect. While complete buildout is very unlikely for the City of Rocklin within the time frame of this Climate Action Plan, we use the projections in the General Plan Update buildout analysis in order to remain consistent with the General Plan Update EIR and state recommendations.

Given these caveats, the business-as-usual General Plan Update forecast found that if energy use, waste production, and transportation trends continue as they did in 2008, emissions within the City of Rocklin will grow by 52% in 2020 and by 103% in 2030 due to population, household, vehicular travel, and commercial growth.

Figure 8 – City of Rocklin 2020 and 2030 Business-as-Usual Forecast



** Please note that waste emissions are less than 1% of total emissions and are therefore not visible at the scale of this figure.*

Table 8 – City of Rocklin 2020 and 2030 Forecast

Business-As-Usual Forecast (Metric Tons CO ₂ e)	2008 Baseline	2020 Forecast (% Change)	2030 Forecast (% Change)
Residential	104,824	140,703 (+34%)	145,920 (+39%)
Commercial	87,364	114,736 (+31%)	159,126 (+82%)
Transportation	234,207	393,971 (+68%)	561,863 (+140%)
Waste	1,605	2,188 (+36%)	2,270 (+41%)
Total	428,001	651,599 (+52%)	869,178 (+103%)

* Subtotals and totals may not equal the sum of component parts shown in this table due to rounding

4.1. Development Assumptions: General Plan Buildout

The General Plan Update analyzed three residential buildout scenarios, based on low, mid-range, and high growth scenarios. These scenarios are based on regional growth forecasts, recent building permit trends, and historic growth factors. The City has assumed that the mid-range growth scenario is most likely to be the accurate average over the buildout horizon. In order to project buildout of non-residential development, the City estimated the annual average absorption rate (historic) for each land use category based on an annual average of the actual growth that occurred between 1992 and 2008.

The baseline figures and projections for the Rocklin business-as-usual projection are summarized in **Tables 9** through **12**.

Table 9 – City of Rocklin General Plan Update Population Projections

Year	Population	Change	% Change	Annual % Change
19901	19,033			
20001	36,330	17,297	91%	9.0%
20082	53,843	17,513	48 %	6.0%
2015 Projected ³	65,614	11,771	22%	3.1%
2020 Projected ³	73,414	7,800	12%	2.4%
2030 Projected ³	76,136	2,722	4%	0.5%

Sources: 1 U.S. Census (1990–2000), available at <http://factfinder.census.gov>.

2 DOF, 2008, available at <http://www.dof.ca.gov/research/demographic/>.

3 City of Rocklin, 2011, General Plan Update Environmental Impact Report, Table 3.0-2, in Section 3.0, Project Description..

Note: Since there is no certainty with regard to the actual pace of population growth, the City of Rocklin has developed population projections based on a low, mid-range, and high growth scenario. For planning purposes, the City has assumed that the mid-range growth scenario is the most likely. The low growth scenario assumes that residential building permits issued will average 200 dwelling units per year, resulting in a 2030 population of 66,133. The mid-range growth scenario (shown above) assumes that residential building permits issued will average 400 dwelling units per year, resulting in a residential buildout population of 76,136 by the year 2028. The high growth scenario assumes that residential building permits issued will average 600 dwelling units per year, resulting in the residential buildout population of 76,136 by the year 2021.

Table 10 – City of Rocklin General Plan Update Household Projections

Year	Households	Change	% Change	Annual % Change
2000 ¹	14,421			
2008 ²	21,036	6,615	46%	5.8%
2015 Projected ³	25,236	4,200	20%	2.8%
2020 Projected ³	28,236	3,000	12%	2.4%
2030 Projected ³	29,283	1,047	4%	3.7%

Sources:

1 U.S. Census, 1990 and 2000, available at <http://factfinder.census.gov>.

2 DOF, 2008, available at <http://www.dof.ca.gov/research/demographic/>.

3 City of Rocklin, 2011, General Plan Update Environmental Impact Report, Table 3.0-2 in Section 3.0, Project Description.

Note: Since there is no certainty with regard to the actual pace of population growth, the City of Rocklin has developed population projections based on a low, mid-range, and high growth scenario. For planning purposes, the City has assumed that the mid-range growth scenario is the most likely. The low growth scenario assumes that residential building permits issued will average 200 dwelling units per year, resulting in a 2030 population of 66,133. The mid-range growth scenario (shown above) assumes that residential building permits issued will average 400 dwelling units per year, resulting in a residential buildout population of 76,136 by the year 2028. The high growth scenario assumes that residential building permits issued will average 600 dwelling units per year, resulting in the residential buildout population of 76,136 by the year 2021.

Table 11 – City of Rocklin General Plan Update Non-Residential Growth Projection Scenarios

Land Use	1992	2008	2030	Buildout
Retail & Commercial Centers	819,000 sq. ft.	3,074,600 sq. ft.	6,176,050 sq. ft.	8,893,700 sq. ft.
Office	188,000 sq. ft.	1,066,900 sq. ft.	2,275,748 sq. ft.	7,043,300 sq. ft.
Industrial	1,890,000 sq. ft.	3,053,300 sq. ft.	4,652,832 sq. ft.	5,099,000 sq. ft.
Total	2,897,000 sq. ft.	7,194,800 sq. ft.	13,104,630 sq. ft.	21,036,000 sq. ft.

Source: City of Rocklin, 2011, General Plan Update Environmental Impact Report, Table 4-3B, page 4A-13

Table 12 – General Plan Update Vehicle Miles Traveled (VMT) with Origin or Destination (or both) in City of Rocklin

	Existing Conditions	Cumulative Conditions			
		Buildout of the Current General Plan	Buildout of the Proposed General Plan	Change in VMT with Proposed General Plan	
Daily	1,092,000	2,478,000	2,498,000	+20,000	0.8%
PM Peak Hour	92,500	209,100	212,200	+3,100	1.5%

Source: City of Rocklin, 2011, General Plan Update Environmental Impact Report.

Note: Estimated using the travel demand model

EMISSIONS FORECAST

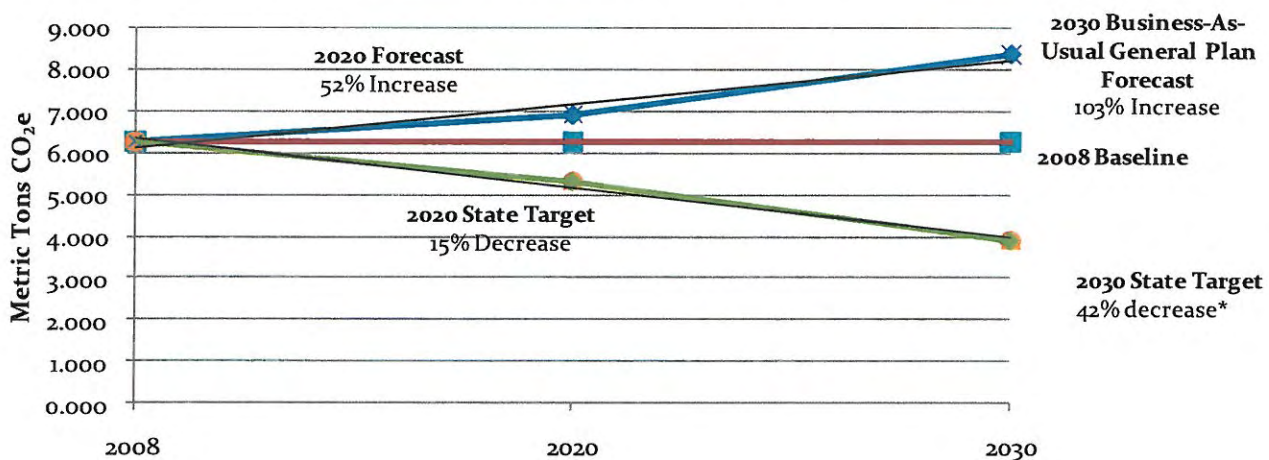
City of Rocklin
Greenhouse Gas Emissions Inventory

5. Conclusion

This magnitude of recommended state reductions relative to Rocklin's General Plan emissions forecast will require significant action at the local, regional, and state level. The State of California Air Resources Board adopted the AB 32 Scoping Plan in December 2008, which recommends that local agencies adopt a reduction target of 15% below current levels by 2020. The Air Resources Board has concluded that a 15% reduction from present levels is equivalent to achieving 1990 levels of greenhouse gas emissions. Year 1990 is not recommended as a reference point in local government inventories because of lack of reliable data.

Figure 9 below shows expected emissions growth relative to AB 32 reduction targets. It also shows 2030 emissions growth in comparison to a linear reduction target line set by Governor Schwarzenegger's Executive Order S-03-05. This Executive Order calls for an 80% reduction below 1990 levels by 2050, or approximately a 95% reduction from present levels. In 2030, a linear projection of this target would equate to approximately 42% of Rocklin's 2008 emissions.

Figure 9 – Business-as-Usual Emissions Growth and State Reduction Targets



*2030 target is an interpolation of the Executive Order S-3-05 2050 target, which establishes a target of 80% below 1990 levels by 2050.

A 15% reduction is equivalent to achieving 5.324 metric tons of carbon dioxide equivalent per service population. The Climate Action Plan presents the reduction target as a per service population metric for purposes of accuracy and simplicity. A service population metric equalizes the impact of divergent growth rates between regions and creates a clear basis for comparison with other jurisdictions. Service population emissions metrics are also consistent with Senate Bill 375 implementation (Steinberg, Chapter 728, Statutes of 2008).¹⁰

¹⁰ Regional Targets Advisory Committee. September 29, 2009. Recommendations of the Regional Targets Advisory Committee (RTAC) Pursuant to Senate Bill 375. <http://www.arb.ca.gov/cc/sb375/rtac/report/092909/finalreport.pdf>

Figure 9 is also a depiction of Rocklin's challenge in attempting to meet state reduction targets. Emissions will continue to increase along the business-as-usual scenario while reduction efforts are initiated. The State is therefore requiring much more than a 15% decrease; the City must also reduce forecasted growth in emissions to achieve the reduction target. Specifically, the City will have to forecasted emissions from 6.92 metric tons CO₂e per service population to 5.32 metric tons CO₂e per service population (a 29.98% decrease). In **Figure 9** above, this disparity is depicted by the difference between the blue line and the green line, both of which show projected increases or desired decreases relative to the red-colored baseline. The Climate Action Plan will work to reduce Rocklin's projected business-as-usual emissions through evaluating local, regional, state, and national strategies and how they apply to Rocklin's emissions inventory that are presented in this document.

CONCLUSION

Appendix B: Quantification of Reduction Measures

Appendix B: Quantification of Reduction Measures

Reductions by Action

City of Rocklin Climate Action Plan Greenhouse Gas Reductions (Metric Tons CO ₂ e per Service Population)		2020	2030
CAP Goals			
1	Energy Efficiency and Conservation	-0.212	-0.376
2	Renewable Energy	-0.013	-0.045
3	Green Building and Design	-0.129	-0.349
4	Downtown Rocklin	-0.004	-0.007
5	City-Wide Land Use	-0.316	-0.516
6	Alternative Transportation Modes	-0.416	-0.987
7	Vehicle Efficiency and Alternative Fuels	-0.020	-0.033
8	Waste Reduction	-0.010	-0.009
Total Local Reductions		-1.119	-2.323
State Actions			
	Renewable Portfolio Standard	-0.448	-0.914
	Pavley (AB 1493)	-0.673	-0.878
	Low Carbon Fuel Standard	-0.061	-0.176
Total State Reductions		-1.181	-1.968
Total Reductions (Local + State)		-2.300	-4.290
Projected Emissions Levels under General Plan Growth		6.920	8.374
Net Emissions (Projected - Reductions)		4.620	4.084
Percentage Change from General Plan Growth Projection		-33.24%	-51.23%
Percentage Change from 2008 Levels		-26.24%	-34.80%

Reductions by Sector

Reductions by Sector (Metric Tons CO ₂ e per Service Population)	2008	2020		2030	
	Baseline	GP Projection	With CAP	With CAP & State	GP Projection
Residential	1.534	1.494	1.299	1.055	1.406
Commercial	1.279	1.219	1.060	0.856	1.533
Transportation	3.428	4.184	3.429	2.695	5.413
Waste	0.023	0.023	0.013	0.013	0.022
Total	6.264	6.920	5.801	4.620	8.374
Percentage Change from 2008	0.00%	10.48%	-7.39%	-26.24%	33.69%
					-3.39%
					4.084
					-34.80%

Energy Use Reduction Measures

Reduction Measure		2020 Reductions			2030 Reductions		
		kWh	Therms	Metric Tons CO ₂ e	kWh	Therms	Metric Tons CO ₂ e
Goal 1: Energy Efficiency and Conservation Reduce emissions from the energy sector through energy efficiency and conservation efforts within municipal and community operations							
	Energy-Efficient Streetlights						
1	Replace City-owned streetlights and other outdoor lighting with energy efficient alternatives. When the technology and cost-effectiveness of efficient outdoor lighting improves for the private sector, consider requirements or incentives for new development.	-462,948	0	-134	-925,896	0	-269
	Municipal Energy Audit and Retrofit						
2	Implement all recommendations contained within the 2008 CEC and PG&E energy audit for municipal facilities.	-282,643	-3,205	-99	-282,643	-3,205	-99
	Energy Conservation Ordinance						
3	Adopt a Residential Energy Conservation Ordinance (RECO) and Commercial Energy and Conservation Ordinance (CECO) to mandate point-of-sale energy and water efficiency audits.	-40,259,757	-1,485,965	-19,594	-78,117,175	-2,969,558	-38,478
	Public Outreach						
4	Work with PG&E and other partners to promote residential and commercial energy efficiency and conservation through energy bill inserts, public services announcements, recognition programs, and other forms of public outreach.	-259,914	-12,294	-141	-269,552	-12,750	-146
Subtotal: Goal 1 Reductions		-41,265,262	-1,501,464	-19,968	-79,595,265	-2,985,513	-38,992

Reduction Measure		2020 Reductions			2030 Reductions		
		kWh	Therms	Metric Tons CO ₂ e	kWh	Therms	Metric Tons CO ₂ e
Goal 2: Renewable Energy Reduce emissions associated with energy generation through promotion and support of alternative energy generation and use							
Municipal Solar Energy							
5	Promote and support the development of solar energy on municipal facilities.	-182,500	0	-53	-456,250	0	-132
Community Renewable Energy							
6	Identify and remove barriers to small-scale, distributed renewable energy production within the community, including amendments to development codes, design guidelines, and zoning ordinances.	-3,650,000	0	-1,060	-14,600,000	0	-4,238
Renewable Energy in Recreation and Conservation Areas							
7	Allow small-scale, distributed renewable energy projects (such as solar and wind power) in areas designated Recreation/Conservation (RC) in the General Plan Update when potentially significant impacts can be avoided or reduced to a less than significant level.	-456,250	0	-132	-912,500	0	-265
Subtotal: Goal 2 Reductions		-4,288,750	0	-1,245	-15,968,750	0	-4,636
Goal 3: Green Building and Design Reduce emissions from the built environment through "green building" and urban design principles that minimize the urban heat island effect and reduce energy consumption							
Green Building Ordinance							
8	Adopt a mandatory Green Building Ordinance for all new development and major remodels to meet minimum green building standards. The Build It Green (BIG) GreenPoint rating system will be used for residential low-rise construction and LEED will be used for residential high-rise and commercial construction. Require that as part of the green building checklist, applicants choose to exceed Title 24 standards, as amended, by at least 15%. Through	-18,334,543	-606,483	-8,550	-62,896,162	-2,201,119	-29,971

Reduction Measure		2020 Reductions			2030 Reductions		
		kWh	Therms	Metric Tons CO ₂ e	kWh	Therms	Metric Tons CO ₂ e
	implementation of this ordinance, support the State's effort to achieve Zero Net Energy Homes by 2020.						
	Cool Paving Materials						
9	Require the use of high albedo material for future outdoor surfaces such as parking lots, median barriers, roadway improvements, and sidewalks in order to reduce the urban heat island effect and save energy.	-5,600,530	0	-1,626	-13,570,716	0	-3,940
	Increased Tree Cover						
10	Increase tree cover within the City to 30% through implementation of the City's Urban Forestry Plan, including updated parking lot shading requirements, as well as updated zoning code regulations.	-6,648,810	0	-1,930	-7,978,572	0	-2,316
Subtotal: Goal 3 Reductions		-30,583,883	-606,483	-12,106	-84,445,449	-2,201,119	-36,227
Total Energy Reductions		-76,137,895	-2,107,947	-33,319	-180,009,464	-5,186,632	-79,854
Projected Energy and Emissions Levels under General Plan Grow		518,567,636	19,764,995	255,439	628,273,879	23,111,118	305,046
Net energy consumption/emissions (Projected Level - Reductions)		442,429,741	17,657,048	222,120	448,264,414	17,924,487	225,192
Percentage Change from Projected General Plan Growth Scenario		-14.68%	-10.67%	-13.04%	-28.65%	-22.44%	-26.18%
Percentage Change from 2008 Inventory		13.27%	18.92%	15.57%	14.77%	20.72%	17.17%

Transportation Reduction Measures

Reduction Measure		2020 Reductions		2030 Reductions	
		Annual VMT	Metric Tons CO ₂ e	Annual VMT	Metric Tons CO ₂ e
Goal 4: Downtown Rocklin Reduce emissions through creation of a denser, more walkable urban core consistent with the Downtown Rocklin Plan					
Mixed Use, Higher Density Development					
11	Apply a mixed-use (residential/commercial or office) land use category or overlay within the Downtown Rocklin Plan area.	-542,768	-317	-1,275,087	-737
Transit Oriented Development					
12	Ensure that applications for new office and mixed-use development in the Downtown Area analyze the project's connection and orientation to pedestrian paths, bicycle paths, and existing transit stops within 1/2 mile of the project site. Projects must be oriented toward existing transit, bicycle, or pedestrian corridor with minimum setbacks. Applicants shall provide information demonstrating compliance with measure requirements including a site map or graphic.	-13,238	-8	-19,284	-11
Pedestrian Orientation					
13	Require applications for new office and mixed-use development in downtown areas to minimize setbacks from the street. Primary entrances shall be located on street frontage. Applicants shall provide information demonstrating compliance with measure requirements including a site map or graphic. Encourage pedestrian oriented plazas, walkways, bike trails, bike lanes and street furniture within the Downtown Plan area and connections to other neighborhood areas. Amend the zoning code for higher density, mixed use areas. Ensure that parking facilities are not sited adjacent to public roads continuous with project sites and that functioning pedestrian entrances to major site uses are located along street frontage. Require that parking facilities do not restrict pedestrian, bicycle, or transit access from adjoining uses.	-13,238	-8	-19,284	-11
Subtotal: Goal 4 Reductions		-569,245	-332	-1,313,654	-759
Goal 5: City-Wide Land Use Reduce Vehicle Miles Traveled (VMT) within the City of Rocklin through more efficient land use policy and design					
14	Mixed Use, Higher Density and Infill Development	-11,286,601	-6,588	-22,385,486	-12,940

Reduction Measure		2020 Reductions		2030 Reductions	
		Annual VMT	Metric Tons CO ₂ e	Annual VMT	Metric Tons CO ₂ e
	Initiate mixed-use re/development in appropriate locations throughout the City of Rocklin. Identify potential infill residential and commercial development sites within the City. Provide incentives for infill development that are in keeping with the character and scale of the surrounding neighborhood, while providing a variety of densities and housing types as reflected by the zoning and land use designation of the property.				
15	Jobs/Housing Balance Attract job generating land uses that will provide a variety of employment opportunities for those who live, or are likely to live, in the community or South Placer subregion.	-30,609,923	-17,867	-57,198,160	-33,063
16	Affordable Housing Continue to support affordable housing development through implementation of the City's Housing Element.	-9,013,592	-5,261	-13,129,488	-7,589
Subtotal: Goal 5 Reductions		-50,910,116	-29,716	-92,713,134	-53,592
Goal 6: Alternative Transportation Modes Reduce emissions from transportation sources through promotion of non-vehicular modes of travel					
Non Residential Bike Parking					
17	Require non-residential projects to provide short-term and long-term bicycle parking facilities. Short-term facilities shall be provided at a minimum ratio of one bike rack space per each 20 required vehicle parking spaces up to 100 vehicle parking spaces for new construction. For each additional 100 required vehicle parking spaces or portion thereof, one bike rack shall be provided. A bike rack shall consist of a minimum of one two-bike capacity rack. Long-term facilities shall be provided at a minimum ratio of one long-term bicycle storage space per 20 parking spaces. Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is monitored by video surveillance 24 hours per day	-4,726,663	-2,759	-10,665,068	-6,165
18	Multi-Family Residential Bike Parking Require bicycle parking for new multi-family residential construction. Long-term facilities shall be provided at a ratio of one long-term bicycle parking space for every 10 units without a garage.	-8,679	-5	-17,453	-10

Reduction Measure		2020 Reductions		2030 Reductions	
		Annual VMT	Metric Tons CO ₂ e	Annual VMT	Metric Tons CO ₂ e
	Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is covered and monitored by video surveillance 24 hours per day.				
	Bicycle Routes				
19	Provide a safe and convenient system of bicycle routes and pedestrian ways by increasing the miles of bike paths and lanes within the City, increasing signage, and ensuring intersection improvements are bicycle-friendly.	-2,879,085	-1,681	-8,698,522	-5,028
	Pedestrian Connections				
20	Promote pedestrian convenience and recreational opportunities through development conditions requiring sidewalks, walking paths, or hiking trails connecting various land uses including residential areas, commercial areas, schools, parks, employment centers and open space.	-2,273,639	-1,327	-5,131,900	-2,966
	Parking Lot Design				
21	For new, large commercial and/or office development require parking lot designs that include clearly marked and shaded pedestrian pathways between the sidewalk and/or transit facilities and building entrances. Site plans should demonstrate how pathways are clearly marked, shaded, and are placed between where the sidewalk and/or transit facilities and building entrances are located.	-364,919	-213	-823,670	-476
	Increased Transit Service				
22	Work with transit providers to plan, fund and implement additional transit services that are cost-effective and responsive to existing and future transit demand.	-56,903,988	-33,215	151,961,667	-87,840
	Walking School Bus Program				
23	Implement a walking school bus program to provide a supervised, safe, and timely commuting alternative for children.	-8,181	-5	-8,484	-5
Subtotal: Goal 6 Reductions		-67,165,153	-39,204	177,306,765	-102,491

Reduction Measure		2020 Reductions		2030 Reductions	
		Annual VMT	Metric Tons CO ₂ e	Annual VMT	Metric Tons CO ₂ e
Goal 7: Vehicle Efficiency and Alternative Fuels					
Reduce emissions by promoting use of alternative fuels and efficient use of traditional automobiles					
Vehicle Idling Limitations					
24	Adopt a vehicle idling ordinance to restrict idling by commercial vehicles, construction vehicles, buses and other similar vehicles, beyond restrictions required by state law	-1,194,941	-697	-1,341,863	-776
25	Neighborhood Electric Vehicles (NEV) Links Coordinate the development of regional bikeway and NEV links with adjacent jurisdictions as outlined in the NEV Transportation Master Plan.	-1,170,000	-683	-2,340,000	-1,353
26	Prioritized Parking Offer prioritized parking for carpools, alternative fuel vehicles, and NEVs in high-traffic areas.	-46,800	-27	-327,600	-189
27	Electric Vehicle Recharging Require existing electric vehicle recharging stations to be updated with current technology upon major remodel of the establishment (> 25% of the appraised cost of the facility).	-940,800	-481	-1,881,600	-1,088
Subtotal: Goal 7 Reductions		-3,352,541	-1,889	-5,891,063	-3,405
Total Transportation Reductions		-121,997,055	-71,141	-277,224,615	-160,248
Projected VMT and Emissions Levels under General Plan Growth		625,943,871	393,971	911,770,000	561,863
Net VMT and Transportation Emissions (Projected Level - Reductions)		503,946,816	322,830	634,545,385	401,615
Percentage Change from Projected General Plan Growth		19.49%	18.06%	30.41%	28.52%
Percentage Change from 2008 Inventory		26.44%	37.84%	59.20%	71.48%

Waste Reduction Measures

Reduction Measure		2020 Reductions		2030 Reductions	
		Tons	Metric Tons CO _{2e}	Tons	Metric Tons CO _{2e}
Goal 8: Waste Reduction Reduce emissions from waste sources by reducing the amount of waste sent to the landfill					
Indirect Waste Diversion					
28	Work with the Western Placer Waste Management Authority (WPWMA) and Materials Recovery Facility (MRF) to include more types of waste in the MRF sorting and recycling process.	-13,760	-654	-14,270	-679
29	Direct Waste Diversion Increase the amount of waste recycled directly from the community through increased outreach, expansion of recycling drop-off centers and hours of operation, and increasing the types and amount of waste accepted.	-5,920	-282	-6,140	-292
Total Goal 8 Reductions		-19,680	-936	-20,410	-971
Projected Waste and Emissions Levels under General Plan Growth		46,018	2,188	47,724	2,270
Net Waste and Emissions (Projected Level - Reductions)		26,338	1,252	27,314	1,299
Percentage Change from Projected General Plan Growth		-42.77%	-42.77%	-42.77%	-42.77%
Percentage Change from 2008 Inventory		-21.96%	-21.96%	-19.07%	-19.07%

Goal 1: Energy Efficiency and Conservation

1. Energy-Efficient Streetlights

Methodology:

Assumes EECBG-funded lights will be installed between 2009 and 2020. No additional streetlight retrofits between 2020 and 2030.

EECBG funding will result in the expected number of lighting replacements (1,600).

The method used to calculate energy savings was developed by City staff and PG&E in completing the City's Energy Efficiency and Conservation Block Grant (EECBG) application. Staff calculated the number of kWhs per high-pressure sodium and metal halide vapor streetlight (traditional lights) versus induction lights using PG&E's Customer-Owned Monthly Rate Schedule. The result was 1,388,844 kWh over the 36-month grant period, or roughly 462,948 kWh per year in reductions.

Source:

City EECBG Application

2. Municipal Energy Audit

Methodology:

Reported by Digital Energy, Inc. during numerous site visits conducted for the CEC-funded energy audit of the listed facilities.

Source:

Digital Energy, Inc. 2008. Energy Efficiency Study for the City of Rocklin. Prepared for the California Energy Commission, Contract number 400-03-008. Work Authorization Number 14. Page 2, Table 1.1.

3. Energy Conservation Ordinance

Methodology:

Total commercial businesses estimated from total commercial square footage divided by average building intensity identified in the General Plan.

It is generally understood that the average person stays in a home or business for 5–7 years. To make a conservative estimate, assume that 50% of existing (pre-2008) homes are turned over between the time of this measure's implementation and 2020 and 100% are turned over between the time of implementation of this measure and 2030.

Please note that these estimates do not include energy reductions from new homes; these are included in the green building measure.

Source:

1. California Energy Commission [CEC] 2003. Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings.
2. California Energy Commission [CEC] 2007. Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings.
3. Onboard Informatics. www.city-data.com/city/Rocklin-California.html
4. Housing Element, Page 4.11-3
5. General Plan Land Use Element, Page 4A-10, March 2005.

Assumptions:

1. Average energy savings of 20% per building will be achieved.
2. Average of 3,500 homes per year were sold in Rocklin between 2004 and 2009 (total of 87,500 sales within the 25-year time period).

4. Public Outreach

Methodology:

This measure is based on empirical data from a public education campaign designed to reduce emissions of criteria air pollutants in the Sacramento region (i.e., the Spare the Air program). This is one of the few public outreach campaigns that conducted an analysis of the effectiveness of the program as it relates to emission reduction. Although this outreach campaign is transportation- and not energy-related, we use its findings for market penetration. The analysis confirmed that approximately 1% of people changed their behavior (e.g., took fewer vehicle trips on Spare the Air days) as a result of the Spare the Air campaign. For the City's public education campaign, it was assumed that approximately 1% of people would reduce their emissions from all sectors (e.g., transportation, electricity, natural gas, waste, water) by about 10%.

Source:

Sacramento Metropolitan Air Quality Management District (SMAQMD) 2009. Spare the Air Control Measure Program; Revision to State Implementation Plan Staff Report.
<http://www.airquality.org/notices/CAPUpdate/STA-revisiontoSIP-StaffRpt23April2009.pdf>

Goal 2: Renewable Energy

5. Municipal Solar Energy

Methodology:

Average Sun Hours per day obtained from the National Renewable Energy Lab. Assumes south-facing tilted system. http://www.nrel.gov/gis/images/map_pv_us_annual10km_dec2008.jpg

Source:

Small systems funded through California's Buy-Down Program have been averaging \$7.00 / watt, after rebates. (California Energy Commission (CEC). 2007.

<http://www.energy.ca.gov/distgen/equipment/photovoltaic/cost.html>)

Electricity in California in 2009 was on average 12.80 cents/kWh (Energy Information Administration (EIA). 2009. http://www.eia.doe.gov/cneaf/electricity/st_profiles/california.html)

6. Community Renewable Energy

Methodology:

The estimate of PV installed is restricted to installations on existing homes and commercial properties. It excludes renewable installations to power new developments that come as a result of green building efforts or the zero net energy homes effort.

Source:

Small systems funded through California's Buy-Down Program have been averaging \$7.00 / watt, after rebates. (California Energy Commission (CEC). 2007.

<http://www.energy.ca.gov/distgen/equipment/photovoltaic/cost.html>)

Electricity in California in 2009 was on average 12.80 cents/kWh (Energy Information Administration (EIA). 2009. http://www.eia.doe.gov/cneaf/electricity/st_profiles/california.html)

7. Renewable Energy in Recreation/Conservation Areas

Methodology:

The General Plan identifies 2,544.70 acres of land as Recreation/Conservation. Acknowledging that some of this area is inappropriate for development associated with renewable energy systems, a conservative estimate of 500 kWh of renewable systems was used.

Assumed 500 kWh by 2030

Source:

Implementation of measure would require an up-front investment to review existing standards and develop recommended ordinance revisions.

Small systems funded through California's Buy-Down Program have been averaging \$7.00 / watt, after rebates. (California Energy Commission (CEC). 2007.

<http://www.energy.ca.gov/distgen/equipment/photovoltaic/cost.html>)

Goal 3: Green Building and Design

8. Green Building Ordinance

Source:

California Energy Commission. 2007. Impact Analysis: 2008 Update to the CA Energy Efficiency Standards for Residential and Nonresidential Buildings. 2008 Title 24 Energy Efficiency Improvements in comparison to 2005 baseline Title efficiency standards.

Methodology:

Assume that 50% of development between 2008 and 2020 will occur after adoption of this ordinance. Assume 2008 standards for all development 2010–2020. Assume Tier 2 for commercial development 2020–2030. Assume Zero Net Energy for residential development 2020–2030. Assume all growth in natural gas and electricity sectors is from new construction.

9. Cool Paving Materials

Methodology:

The Sacramento metropolitan area is 40% pavement. Assume 30% will be replaced with high albedo content. Pavement has a potential for a .15 increase in albedo. $0.40 * 0.30 * 0.15 =$ net change of 0.018 by 2030. Assume half by 2020 or .009.

A 10K decrease in temperature for a 0.25 increase in albedo (Akbari)

10 Kelvin = 10 Celsius

Electricity demand in cities increases by 2–4% for each 1 degree Celsius increase in temperature (Akbari 2001). For our purposes. We will assume 3%.

A combination of the following strategies will be utilized for 50% of the landscape (including roads, sidewalks, courtyards, and parking lots): Shade (within 5 years of occupancy); paving materials with a Solar Reflectance Index (SRI) of at least 29; open grid pavement system.

Source:

1. U.S. Environmental Protection Agency (EPA). Heat Island Brochure. <http://www.epa.gov/heatisland/resources/pdf/HIRIbrochure.pdf>
2. Rosenfeld, Arthur. 2008. Energy Efficiency: The first and most profitable way to delay Climate Change. <http://www.energy.ca.gov/2008publications/CEC-999-2008-015/CEC-999-2008-015.ppt#264,1>.
3. Akbari, Hashem. Energy Saving Potentials and Air Quality Benefits of Urban Heat Island Mitigation1. <http://www.osti.gov/bridge/servlets/purl/860475-UIHWIq/860475.pdf>
4. Akbari, Hashem. 2001. Cool Surfaces and Shade Trees to Reduce Energy Use and Improve Air Quality in Urban Areas. <http://www.fs.fed.us/ccrc/topics/urban-forests/docs/cool%20surfaces%20and%20shade%20trees%20to%20improve%20air%20quality.pdf>

10. Increased Tree Cover

Methodology:

Area of the City of Rocklin and the City's Sphere of Influence (SOI) is 19.8 square miles = 12,672 acres (General Plan EIR Land Use Chapter, page 4.1-1).

The average urban tree is defined as one having 133 square feet of canopy cover (American Forests, <http://www.americanforests.org/resources/urbanforests/treedeficit.php>)

Sequestration: If 50 million trees were planted, they would sequester about 4.5 MT (million tons) CO₂ annually. If they were planted strategically to shade east and west walls of residential buildings, they would reduce air conditioning energy use by 6,408 GWh, equivalent to an average annual CO₂ equivalent emission reduction of 1.8 MT. The carbon sequestration value represents the total carbon sequestration achieved by the planted trees (as part of this measure).

Urban Heat Island Reduction: According to the United States Department of Agriculture, planting shade trees within 40 feet of the south side or within 60 feet of the west side of properties can reduce summertime energy consumption associated with air conditioning by approximately 30%.

If 50,000,000 trees sequester 4.5 MT CO₂ annually, then 1 tree sequesters 0.09 tons CO₂.

If 50,000,000 trees would reduce energy use by 6,408 GWh (6,408,000,000 kWh), then 1 tree reduces energy use by 128.16 kWh per year.

Assumes average distance from and orientation to buildings, building vintage, and type of air conditioning/heating.

Source:

1. U.S. Forest Service, Climate Change Resource Center. Urban Forest and Climate Change. www.fs.fed.us/ccrc/topics/urban-forests
2. USDA Forest Service, Pacific Northwest Research Station. 2009. California Study Shows Shade Trees Reduce Summertime Electricity Use. Science Daily 7 January 2009. <http://www.sciencedaily.com/releases/2009/01/090105150831.htm>.

Goal 4: Downtown Rocklin

11. Mixed-Use, Higher-Density Development

Methodology:

The performance of this measure is related to the elasticity of increased density. The literature supports a 5% reduction in vehicle miles traveled for every 100% increase in density. To calculate the net increase in density between 2008 and the target years, the following variables were used based on the Downtown Rocklin Plan:

Population density from residents and employees in Downtown in 2008, 2020, and 2030.

Proportion of city land that is in Downtown.

Source:

1. City of Rocklin. 2008. Draft 2008–2013 Housing Element.
2. City of Rocklin. 2006. Downtown Rocklin Plan, Regulating Code.
3. City of Rocklin. 2006. Downtown Rocklin Plan, Regulating Code. Downtown Implementation Strategy.
4. Ewing, Reid, et al. 2001. Travel and the Built Environment: A Synthesis. Transportation Research
5. Sacramento Area Council of Governments and the California Energy Commission. (nd). I-PLACE3S, version 1.1.
6. City of Rocklin. 2011 General Plan Environmental Impact Report. Land Use Chapter.

12. Transit-Oriented Development

Methodology:

Assumes that the transit, bicycle, or pedestrian corridor is already in existence. If the facility is merely planned for, the reduction credit is reduced to 0.25%.

Source:

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 119)

13. Pedestrian Orientation

Methodology:

The San Joaquin Valley Air Pollution Control District (SJVAPCD) CCAP guidebook attributes a 0.5% reduction per 1% improvement in transit frequency. Based on a case study presented in the CCAP report, a 10% increase can be expected in transit ridership from pedestrian-oriented development, which would result in a 0.5% reduction in transportation-related emissions.

Implementation of this measure would generate an annual GHG reduction of 1.5% MTCO₂e.

It is assumed that surrounding uses are high density or mixed use, and there are other adjoining pedestrian and bicycle connections, such as wide sidewalks and bike lanes, and surrounding uses that also implement these principles.

Source:

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (MM 17, page 129)

CCAP Transportation Emission Guidebook; TIAX, as sourced in the SJVAPCD Report

Goal 5: Citywide Land Use

14. Mixed Use, Higher Density, and Infill Development

Methodology:

The performance of this measure is related to the elasticity of increased density. The literature supports a 5% reduction in vehicle miles traveled for every 100% increase in density. To calculate the net increase in density in all city land outside of Downtown between 2008 and the target years, the following variables were needed.

Population density from residents and employees citywide in 2008, 2020, and 2030.

Reduction in VMT from Downtown.

A reduction in VMT attributed specifically to land in Downtown was calculated in Measure 11. The reduction from Measure 11 was subtracted from total citywide reduction in VMT to isolate the VMT

attributable to all land outside Downtown. This method prevented double counting. Based on a study by Ewing, Reid, et al. (2001), it was assumed that a 5% reduction in VMT would result from each 100% increase in density. Accordingly, .05 was taken of each target year's percentage increase in density. The resulting number was the percentage reduction in VMT for the target year. The percentage of reduction in VMT for the target year that resulted from the measure was multiplied by the annual VMT projected for that year. This resulted in a total projected decrease in VMT citywide. The decrease in VMT attributable specifically to Downtown, as calculated in Measure 11, was subtracted from the total projected decrease in VMT in order to establish the decrease in VMT attributable to all city areas outside of the Downtown.

15. Jobs/Housing Balance

Methodology:

The calculation for expected transportation emissions reductions was provided by the SJVAPCD Climate Change Action Plan. 2030 General Plan household projections were utilized, as were employment estimates.

Tool/Method (trip reduction = $(1 - (\text{ABS}(1.5 \cdot h - e) / (1.5 \cdot h + e)) - 0.25) / 0.25 \cdot 0.03$) where h = study area housing units, e = study area employment.

Source:

1. San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 124)
2. Sacramento Metropolitan Air Quality Management District (SMAQMD). 2007. Recommended Guidance for Land Use Emission Reductions, Version 2.4.
3. Nelson/Nygaard. 2005. pg. 12. (trip reduction = $(1 - (\text{ABS}(1.5 \cdot h - e) / (1.5 \cdot h + e)) - 0.25) / 0.25 \cdot 0.03$) where h = study area housing units, e = study area employment, and ABS = absolute value (Criterion & Fehr & Peers, 2001). Asymptote of 9% reduction, and an ideal 1.5 jobs per household. Note these point reductions were taken from Urbemis 2007 9.2.458 data according to sample jobs to housing ratio.
4. Urbemis 2007 Version 9.2.4. Rimpo and Associates.

16. Affordable Housing

Methodology:

URBEMIS provides a 4% reduction in vehicle trips for each deed-restricted below market rate (BMR) unit. Thus, the total reduction is as follows: Trip reduction = percentage of units that are BMR * 0.04. The 2009 Draft Housing Element identifies Rocklin's housing needs as 51.8% low income, very low income, or extremely low income. Since 25% of this need can be satisfied by the preservation of existing affordable housing units, we will assume that approximately 36% of all housing will be low, very

low, or extremely low income between 2009 and 2030. This assumption is consistent with 2006–2008 housing growth, as shown on Housing Element page 7-63.

Assume that all new traffic is caused by new business growth and new housing growth equally.

Source:

1. California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. (Appendix B MSG-21)
2. Nelson/Nygaard Consulting Associates. 2005. Creating Low-Traffic Developments: Adjusting Site-Level Vehicle Trip Generation Using URBEMIS.

Goal 6: Alternative Transportation Modes

17. Non-Residential Bicycle Parking

Methodology:

The calculation for expected transportation emissions reductions was provided by the SJVAPCD Climate Change Action Plan and manipulated to correspond to the bicycle parking requirements proposed for the City of Rocklin.

According to CAPCOA/the SJVAPCD Climate Change Action Plan, provision of short- and long-term bike parking at the rate of 1:20 vehicle spaces supports a 0.625% reduction in emissions. The City of Rocklin is proposing requiring bicycle parking at a ratio of 1:20 vehicle spaces up to 100 vehicle spaces and for each additional 100 required vehicle spaces or portion thereof, one bicycle rack shall be provided.

According to the 2001 National Household Travel Survey, average annual VMT per household is 21,187 and the “to or from work” subcategory is 5,724 (27.0%). Shopping is 3,062 (14.5%). Other Family and Personal Business is 3,956 (18.7%). Social and Recreational driving is 5,186 (24.5%). Therefore, VMT attributed to commercial businesses is $27\% + 14.5\% = 41.5\%$.

It was assumed that emissions reductions for commercial bicycle parking are attributed equally to short- and long-term bicycle parking spaces.

Source:

1. San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 106)

2. California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (Appendix B).

3. The 2001 National Household Travel Survey includes a Summary of Travel Trends published here: <http://nhts.ornl.gov/2001/pub/STT.pdf> (2.4 MB download). See page 30 of the PDF.

18. Multi-Family Residential Bike Parking

Methodology:

According to CAPCOA/the SJVAPCD Climate Change Action Plan, provision of long-term bike parking at the rate of 1 per unit supports a 0.625% reduction in emissions. The City of Rocklin is proposing requiring long-term bike parking at one-tenth that rate, or 1 long-term bicycle space per 10 units, so the reduction for this measure would result in one-tenth of 0.625%, or a 0.0625% reduction.

According to the 2001 National Household Travel Survey, average annual VMT per household is 21,187 and the “to or from work” subcategory is 5,724 (27.0%). Shopping is 3,062 (14.5%). Other Family and Personal Business is 3,956 (18.7%). Social and Recreational driving is 5,186 (24.5%). Therefore, VMT attributed to residents is $18.7\% + 24.5\% = 43.5$ (trips to commercial destinations are captured within the commercial bike parking measure).

Multifamily households currently constitute 18% of Rocklin's housing stock (Draft Housing Element, Page 7-41). Assume multifamily households increase to 20% by 2020 and 25% by 2030.

It was assumed that emissions reductions for commercial bicycle parking are attributed equally to short- and long-term bicycle parking spaces.

Source:

1. San Joaquin Valley Air Pollution Control District (SJVACPD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 106)

2. California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act (Appendix B).

3. The 2001 National Household Travel Survey includes a Summary of Travel Trends published here: <http://nhts.ornl.gov/2001/pub/STT.pdf> (2.4 MB download). See page 30 of the PDF.

19. Bike Routes

From VTPI:

Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel (PBQD, 2000). Each mile of bikeway per 100,000 residents increases bicycle commuting 0.075 percent, all else being equal (Nelson and Allen, 1997).

Although only about 1% of total U.S. trips are made by bicycle, several North American communities (Palo Alto, Madison, Boulder, Eugene) have cycling rates five to ten times higher due to supportive public policies (Comsis, 1993).

Assumed that 1% of trips are performed by bikes per national average

Source:

Comsis Corporation (1993), Implementing Effective Travel Demand Management Measures: Inventory of Measures and Synthesis of Experience, USDOT and Institute of Transportation Engineers (www.ite.org.)

Source:

Victoria Transportation Planning Institute (VTPI) - <http://www.vtpi.org/tdm/tdm93.htm>

Miles of new bike lanes derived from the City of Rocklin and PCTPA/Quad Knopf, Inc., 2009 bikeway diagram and City GIS shapefiles to determine bike path and bike lane lengths.

20. Pedestrian Connections

Methodology:

As cited in the TIAX report, the CCAP guidebook attributes a 1% reduction in VMT for the removal of physical barriers between residential and non-residential uses that impede bicycle or pedestrian circulation.

Assume that all new VMT is due to increased development within the City. Assume that all development will include the removal of physical barriers between residential and non-residential uses that impede bicycle or pedestrian circulation

Source:

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 109)

21. Parking Lot Design

Methodology:

The CCAP guidebook attributes between 1% and 4% reduction from all pedestrian measures. There is no specific information related to providing shaded pedestrian pathways between transit facilities and building entrances. It could be said that providing covered carpool/vanpool spaces near the entrance to the buildings has the similar goal of increasing the comfort of the user while walking to the building entrance. The TIAX report assigns a 1% reduction to the covered carpool measure. Transit usage is most affected by the headway times and the proximity to the destination. Therefore, it would seem reasonable to assume .5%

Source:

CCAP Transportation Emission Guidebook; TIAX Results of 2005 Literature Search Conducted by TIAX on behalf of SMAQMD.

Percentage of travel attributed to shopping and commuting from national averages (14% shopping and 18% commuting) as reported by ONL (2004), Transportation Energy Book, Oak Ridge National Lab, Dept. of Energy (<http://cta.ornl.gov/data/index.shtml>).

Source:

1. San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 116)
2. California Air Pollution Control Officers Association (CAPCOA). 2008. CCAP Transportation Emission Guidebook; TIAX Results of 2005 Literature Search Conducted by TIAX on behalf of SMAQMD, as cited in CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. (Appendix B).

22-Increased Transit Service

Methodology:

This measure quantifies increased use of the existing transit network due to population growth and makes an assumption of the jump in ridership due to new bus and rail transit options as planned in the Sacramento Regional Blueprint, as supported by the SACOG Metropolitan Transportation Plan (MTP) 2035.

MTP analysis shows that transit ridership in the Sacramento region will increase from 1% to 1.2% of all trips by 2035.

Trip length is assumed to be constant among vehicle and transit riders.

Source:

1. Victoria Transportation Policy Institute (VTPI). vtpi.org/tdm/tdm47.htm
2. Placer County Transit (PCT). www.placer.ca.gov/departments/works/transit/pct
3. Sacramento Area Council of Governments (SACOG). 2008. Regional Transportation Plan 2035, Chapter 2 - Summary of Budget and Investments and Chapter 4 - Summary of Performance.

23 Walking School Bus Program

Methodology:

Assume number of school-age children increases evenly with population growth.

According to VTPI, there are currently few detailed studies of the effectiveness of School Transport Management programs, but anecdotal evidence indicates that total reductions in automobile trips of 10–20% or more are possible at a particular school under programs such as a walking school bus. For the purposes of this study, we will assume a 15% reduction in automobile trips

Assume average round-trip drop off distance for parents is 5 miles.

All students living within 2 miles of a school will participate (GIS buffers to determine percentage of residences within 2 miles of schools).

Source:

1. California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act (Appendix B MSG-2).
2. National Center for Safe Routes to School.
http://www.saferoutesinfo.org/resources/collateral/srts_talkingpoints.doc
3. U.S. Census Bureau. <http://factfinder.census.gov>

Goal 7: Vehicle Efficiency and Alternative Fuels

24. Vehicle Idling Limitations

Methodology:

Truck population: According to EMFAC2007, the population of heavy-duty trucks (over 10,000 pounds) was approximately 10,628 in 2020 and 12,015 in 2030. Assuming that truck activity is proportionate with VMT per jurisdiction within Placer County as reported in the 2007 Caltrans Highway Performance

Maintenance System report (HPMS), Rocklin would be responsible for 15.3% of traffic and vehicles or approximately 1,626 trucks in 2020 and 1,838 in 2030.

Assume that this anti-idling enforcement successfully targets half, or 813, of heavy-duty trucks by 2020 and all trucks (1,838) in 2030.

Assume heavy trucks idle for one hour per day for 240 days/year (5-day workweek minus holidays).

According to <http://www.cobbcountyga.gov/green/downloads/meassure37-reduction.pdf>, vehicles consume 1 gallon of diesel fuel for every hour of idling.

Conversion to VMT using EMFAC miles per gallon fuel economy from EMFAC2007.

Source:

1. Environmental News Network. Vehicle Idling Adds to Greenhouse Gas Emissions.

<http://www.enn.com/pollution/article/37343>

2. California state law. Available at:
<http://o3.arb.ca.gov/msprog/truck-idling/truck-idling.htm>

3. Natural Resources Canada, Emission impacts resulting from vehicle idling. Available at:

<http://oee.nrcan.gc.ca/transportation/idling/impact.cfm?attr=8>

25. NEV Links

Methodology:

According to the NEV Transportation Plan, there will be approximately 3,000 NEVs in Rocklin at buildout of the city, generally used to make short trips of less than 3 miles. Assume one 2-mile trip five times a week per vehicle.

The energy consumption of a NEV is less than one-fifth that of a conventional automobile; the fuel efficiency of the NEV is 0.223 kWh/mile (measured) or equivalent 150 mpg (Report to CEC, July 1, 2002, p. 600-02-020F). Expected energy reductions in kWh were taken from the City's proposed Energy Efficiency and Conservation Strategy. Certified emissions factors for PG&E energy were applied to these kWh reductions to generate the GHG reduction potential.

Source:

1. San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Climate Change Action Plan: Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act; Draft Staff Report, June 30, 2009. (page 122)

2. California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. (Appendix B).

3. City of Rocklin. 2008. Neighborhood Electric Vehicle Plan; adopted February 26, 2008.

26. Prioritized Parking

Methodology:

This measure will further incentivize alternative fuel vehicles and carpooling. This measure's effect on NEV use and electric vehicle use is included in Measures 25 and 27, respectively. This measure calculates the benefit of carpools. This measure assumes that one 3-mile trip will be avoided with each carpool. It assumes that there will be 5–7 carpool visits to each parking spot per day, Monday through Saturday.

27. Electric Vehicle Recharging

Methodology:

Electric vehicles (EV) are much more efficient than standard internal combustion engine vehicles. The performance of this measure is related to the replacement of standard vehicles with EVs once the necessary infrastructure is available. The literature supports the fuel use reduction equivalent to one 10-mile trip for every charging station available. The energy use needed to service the charging stations was then calculated to discount the emissions reductions.

Assumes that stations will be installed through civic and private development at the rate of 20 per year.

Source:

Calculated assuming parking spaces were used for commuting: 5 days/week, 48 weeks/year, and 9.8 miles each way.

Source for trip length: National Household Travel Survey, 2001. 2,298 Billion miles/235 Billion trips = 9.8 miles/trip.

Kwh used = 11.1*gallons of gasoline saved. Based on a comparison of miles/gallon and Kwh/mile of 1999 Ford Ranger, 1998 Chevy S-10, and 1998 Toyota RAV. Gas mpg from www.fueleconomy.gov/feg.findacar.html. Electric Kwh/mile from Idaho National Laboratory. 2006. Full Size Electric Vehicles. Advanced Vehicle Testing Reports at avt.inel.gov.

Goal 8: Waste Reduction

28. Indirect Waste Diversion

Methodology:

The GHG reductions associated with this measure were calculated using the EPA WARM model. The WARM model contains nationwide emission factors for various categories of waste. According to

CalRecycle, Rocklin's waste stream contained the following sources in 2008 that have a possibility to be diverted from the MRF:

- ◆ Food scraps (assuming pre-sorting): 4,927 tons
- ◆ Yard trimmings (assuming pre-sorting): 776 tons
- ◆ Grass (assuming pre-sorting): 1,417 tons
- ◆ Branches: 101 tons
- ◆ Mixed plastics: 2,868 tons

Adjusting these figures for increased population, this measure would result in a greenhouse gas reduction of 13,760 tons by 2020 and 14,270 tons by 2030 according to the WARM tool.

Assumed that waste categorization percentages remained constant from 2008 to 2030.

Source:

www.epa.gov/warm

29. Direct Waste Diversion

Methodology:

The GHG reductions associated with this measure were calculated using the EPA WARM model. The WARM model contains nationwide emission factors for various categories of waste. According to CalRecycle, Rocklin's waste stream contained the following sources in 2008 that have a possibility to be directly diverted from the landfill:

- ◆ Corrugated cardboard: 1,923 tons
- ◆ Magazines: 270 tons
- ◆ Newspaper: 742 tons
- ◆ Personal computers: 405 tons

General municipal solid waste (which includes plastic grocery bags, hard plastics, and many forms of e-waste): 4,556 tons (1,000 tons assumed to be e-waste, hard plastics, and plastic grocery bags)

Adjusting these figures for increased population in 2020 and 2030, this measure would result in a greenhouse gas reduction of 5,920 tons by 2020 and 6,140 tons by 2030 according to the WARM tool.

Assumed that waste categorization percentages remained constant from 2008 to 2030.

Source:

CalRecycle. Waste composition data. www.ciwmb.ca.gov/Publications/LocalAsst/34004005.pdf

